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A British Medical Association Lecture

ON

GASTRIC HAEMORRHAGE.

GIVEN BEFORE THE EXETER DIVISION

BY

CHARLES MILLER, C.B.E., M.D., F.R.C.P.,

CONSULTING PHYSICIAN TO THE LONDON HOSPITAL; ASSISTANT PHYSICIAN, ROYAL DEVON AND EXETER HOSPITAL.

FEW occurrences cause so much consternation as the vomiting of a large quantity of blood. The equally serious but less sensational events, fainting, sudden pallor, and the subsequent passage of a tarry stool, do not produce the same effect on the minds of the patient and his friends. But from the standpoint of the doctor the two events are seen to be of equal importance, for they point to internal haemorrhage in stomach or duodenum. For convenience I propose to consider the acid part of the duodenum as part of the stomach, as both are subject to the same kind of digestive juice. Pathologically the two regions are subject to similar disorders, though anatomically they have to be described separately.

It used to be thought that melaena without haematemesis was a point in favour of the diagnosis of duodenal ulcer rather than of gastric ulcer. But this condition is found in cases of gastric ulcer, and, on the other hand, haematemesis can occur with duodenal ulcer. In dealing briefly with gastric haemorrhage only copious haemorrhage will be considered. Occult blood in the stools has its value in the diagnosis of certain alimentary disorders, but is outside the subject of this occasion.

At the beginning of the century haematemesis, except in cases of cirrhosis of the liver, was thought to be a sure sign of gastric ulcer. By gastric ulcer was meant a large ulcerated area, visible and palpable in the exposed stomach. The advance in gastric surgery has proved many ideas about disorders of the stomach to be wrong, and gastric haemorrhage has been shown to be due to many conditions other than a gross ulcer of the stomach. It may be said that, although a gastric ulcer can be associated with copious haemorrhage, many large chronic ulcers persist for years without any noticeable bleeding, and many cases of copious haemorrhage are found among patients who have no sign of ulcer of any size.

CAUSES OF GASTRIC HAEMORRHAGE.

As a general principle it may be stated that when haemorrhage occurs there must have been loss of tissue —that is, ulceration. The ulceration may be minute and even microscopic. Gastric ulceration is due to the digestion of the stomach wall by the gastric juice. But before self-digestion takes place there is some damage to the stomach wall, for gastric juice does not digest healthy mucous membrane.

Gastric ulceration is due to the digestion of damaged tissue in the wall of the stomach. The wall of the stomach is well supplied with blood, and during digestion it has the appearance of soft red velvet, which looks as if it would bleed freely if scratched. The blood should, and does, remain in the blood vessels; but if there is any damaged tissue the gastric juice will digest it, and may open a blood vessel or vessels. Of course, trauma may directly produce haemorrhage. The act of violent vomiting, the passage of a tube into the stomach, a blow on the epigastrium, may produce haemorrhage from a stomach that is not ulcerated even minutely, and the damage done by severe trauma can produce subsequent ulceration. But haemorrhage from the stomach is usually a sequel to the digestion of the mucous membrane and deeper parts of the stomach wall by the action of the gastric juice.

It becomes necessary to examine the various processes by which the stomach can be damaged. Trauma has already been mentioned. It is conceivable—in fact it has happened —that trauma producing submucous haemorrhage has been followed by chronic ulceration.

Corrosive poisons, of course, will damage the stomach and produce haemorrhage by their own action; I can remember a case of repeated haemorrhage coming from a chronic gastric ulcer following attempted suicide by spirits of salt some years before. But such cases as these are few and not worth further consideration at the moment.

Apart from such traumatic causes, other possible causes of damage to the stomach have to be considered. First, interruption of the blood supply will undoubtedly lead to the death of tissue locally, and the gastric juice will do the rest.

In cases of mitral stenosis when, as a terminal event, auricular emboli are showered into the arterial stream some may block up vessels in the wall of the stomach. The neighbouring mucous membrane is starved of blood and in its damaged state can be digested. The digestion may go further than the block in the arteriole and haemorrhage can follow. This is a terminal event, and sometimes the stomach is found *post mortem* to be filled with blood. An example of this cause of gastric haemorrhage was afforded by the case of a man, aged 26, who died from mitral stenosis. *Post mortem* there were recent infarcts in the spleen and kidneys; the stomach was full of blood; there were numerous small ulcers throughout all parts of the stomach. Microscopic examination showed blocking of some arterioles and a thrombus in a branch of the coronary artery. In one section the artery was empty and its wall deficient at one point so that the lumen communicated with the cavity of the stomach.

In cases of progressive endocarditis gastric haemorrhage is sometimes seen. In these cases also emboli are the cause, but here the emboli may contain microbes and can produce the effects of acute local inflammation. A woman, aged 51, died from ulcerative endocarditis of the aortic and mitral valves. *Post mortem* in the stomach there were many small punched-out ulcers situated in greatest numbers in the fundus. There was some blood in the stomach. Arterial emboli can be spread throughout the stomach, but are usually most numerous in the fundus, which is not often the site of gastric ulcer.

Obstruction of veins can also be followed by similar results. In the case of a boy aged 12, who died of haematemesis, there was such proliferation of the intima of the veins that many sections showed complete blocking. Here there were numerous haemorrhagic points visible in the stomach.

In general miliary tuberculosis, when the blood is soaking the tissues with tubercle bacilli, tubercles may spring up in the gastric wall and are promptly digested. Occasionally, but rarely, slight haemorrhage may occur from the bases of the digested tubercles.

Cirrhosis of the liver and other conditions which produce portal congestion can cause haemorrhage. The explanation is that the bleeding comes from the bursting of a full vein. But in such cases the circulation in the portal area is slowed, and stagnation results. Conceivably this state of affairs would help the gastric juice to effect some superficial ulceration, leading very easily to haemorrhage. Also it should be remembered that chronic gastric ulceration is not uncommon in cases of alcoholic cirrhosis of the liver.

Gastric haemorrhage is sometimes seen in patients who have a raised blood pressure. In such subjects haemorrhage can occur from any region in which the arteries do not derive much support from the tissues through which they are travelling. Nose-bleeding, cerebral haemorrhage, and gastric haemorrhage may occur. In the early days of gastric surgery when gastro-jejunostomy was the treatment of most gastric conditions, a man of 30 was admitted for haematemesis. Later gastro-jejunostomy was performed. He was readmitted for haematuria. He had a systolic blood pressure of 210 mm. of mercury, retinal haemorrhages, and granular casts in the urine. *Post mortem* small fibrous kidneys were found.

Primary blood diseases frequently produce subcutaneous and other haemorrhage, and the stomach does not escape, but this form of haemorrhage need not be considered further.

The part that syphilis plays in the production of gastric ulceration and haemorrhage can be best illustrated by the recital of two cases. A man aged 35, a schoolmaster, was admitted to hospital pale and collapsed after haematemesis.

After he had recovered the abdomen was opened and several recent gummata were seen in the liver. The remainder of the liver appeared to be healthy. Certainly there was no great amount of fibrosis, and it could not be argued that portal congestion was an important factor. Possibly he had a syphilitic gastric ulcer which escaped notice. Another man was admitted in a similar state whose Wassermann reaction was found to be positive. He was given antisyphilitic treatment and did well. No abnormality was found radiologically. He went out and visited the seaside, where he died, on the pier, from haematemesis. Further there is McNee's classical case in which he found spirochaetes in the wall of a gastric ulcer.

The two cases I have quoted show that haematemesis can occur in the syphilitic, and McNee's case proves that syphilis can cause gastric ulceration. Possibly syphilitic ulceration is more frequent than is thought.

Chronic Gastric Ulcer.

So far, with the exception of cirrhosis, only the less common causes of gastric haemorrhage have been considered.

In chronic gastric ulcer a vessel of some size in the base or wall may be eroded. There is no difficulty here in appreciating how haemorrhage arises. The exposed vessel is eroded by the action of the gastric juice. Such an event occurs commonly in ulcers of the lesser curvature that become adherent to the pancreas. The splenic vein may be in the floor of the ulcer, and haemorrhage from it may be very copious. Of the chronic gastric ulcers this form is the one most commonly associated with severe bleeding.

Cancer of the Stomach.

It is also easy to see how haemorrhage can occur with cancer of the stomach. The growth, as it spreads, contains much semi-necrotic tissue which is readily digested and ulcerated. Bleeding can occur, and usually does, but infrequently in large amount. Blood is often seen in the recovered test meal in cases of gastric carcinoma, and if it is present in all specimens of a fractional test meal the diagnosis of growth receives strong support. Also the repeated discovery of occult blood in the stools is an important diagnostic point in a suspected case. But a haematemesis that blanches the patient is not as common in carcinoma of the stomach as in cases of simple chronic ulceration.

Acute Ulcer.

These disorders, however, do not provide more than half of the cases admitted to hospital for haematemesis or melaena. We are all familiar with the pale, plump young woman who vomits blood, and is admitted in a collapsed condition. But it will be the experience of most doctors that young women suffer less from gastric haemorrhage than they did fifteen years ago. Perhaps the greater freedom of limb and increased activity, and the more hygienic dress of to-day, have improved the health of young women in this respect as in many others. Chlorosis is now a rare disease. Indigestion and chlorosis went hand in hand. The disappearance of chlorosis is contemporary with the smaller incidence of gastric haemorrhage in young women.

At one time, in the earlier days of gastric surgery, it was thought that these cases were surgical emergencies. The results were not satisfactory. As a rule nothing was found in the stomach except blood, and in many cases the operation was more than the patient could stand. Even at the *post-mortem* examination it was difficult to see where the haemorrhage had occurred. It is obvious that in such cases the bleeding must be from many small points. If we remember that there is a redundance of mucous membrane in the stomach it is easy to imagine how a minute ulcer can be covered over by the neighbouring mucous membrane.

When Matthes was attempting to produce artificial ulcers in the stomachs of dogs, he found great difficulty in doing so. If he removed a small area of mucous membrane the bare area was soon made invisible by the contraction of the smooth muscle and the covering made by the surrounding mucous membrane. He attempted to get over this difficulty by suturing the muscular coat to a glass ring placed on the peritoneal surface. Even so the bare area was no further ulcerated, and the mucous membrane grew over it. This shows that small ulcers are easily obliterated by the contraction of the underlying muscle and the new covering provided by the mucous membrane. Actually he was unable to produce a lasting ulcer until he had given large quantities of acid with the food.

Gastrostaxis.

The condition of gastric haemorrhage without any obvious ulceration or bleeding point has been called "gastrostaxis." There is a danger in coining new words to describe morbid conditions, unless the word gives some explanation of the condition. There is no harm in using such a word as "gastrostaxis" if the user is merely describing a phenomenon, and does not think that he has given an explanation of the cause of the phenomenon.

I have attempted to argue that stomachs bleed if they digest their own wall so as to open blood vessels, and that to allow this process to begin some part of the wall of the stomach has previously been damaged and rendered necrotic. If we keep the term ulcer, either gastric or duodenal, for something gross that can be seen and felt, we must have some other term for cases of microscopic or minute ulceration in which haemorrhage occurs. The haemorrhage may be the only clinical evidence of its presence, and *post mortem*, but for the haemorrhage, the stomach might pass as normal to the naked eye. The word "erosions" has been used to denote these minute and even microscopic ulcers. Even if they are just visible these small acute ulcers can be called erosions. It does not matter much to clinicians whether they are just visible or invisible, for it is to be hoped that they will never see during life the inside of a stomach in which there has been haemorrhage from "erosions."

These minute ulcers are best seen where lymphatic tissue is most thickly spread—that is, along the lesser curvature and in the distal part of the stomach. There are also smaller isolated lymphatic follicles scattered throughout the stomach. The lymphatic tissue of the stomach behaves in the same way as lymphatic tissue elsewhere. Infection of a nail-bed may cause enlargement of axillary glands and even an abscess. The lymphatic tissue of the stomach can behave in the same way, but there is the added factor of the digestive power of gastric juice, which will eat away any damaged tissue in the stomach and leave a hole. In the process the stomach may be perforated or blood vessels be eroded. Dr. Beaumont, in his historical description of the stomach of Alexis St. Martin, described what he saw through a gastric fistula. He sometimes saw raised red areas that were comparable to boils. Alexis was no total abstainer, nor was the popular press then in existence to direct his diet on hygienic lines. The result was that Dr. Beaumont was able to look inside the stomach of a man who frequently ill-treated it.

If the lymphatic tissue of the stomach becomes inflamed as the result of infection it is incumbent on us to discover how the infection arose, and by what path the stomach was invaded. Obviously the mouth is a possible focus of infection. The condition of the teeth and gums in many dyspeptics is beyond description, and insistence on oral hygiene may remove gastric symptoms.

The acid gastric juice has an antiseptic action on many organisms, but not on all, and it is possible for swallowed organisms to set up a gastric inflammation. Possibly also the lymphatics of the oesophagus may serve as a path for invading organisms. The following case illustrates the effect of oral sepsis.

An elderly man was treated by diathermy for cancer of the tongue. The tongue became very foul, and a large slough formed. About a week after the operation he had a large vomit of blood. There was no bleeding from the tongue, and there were no gastric symptoms in his past history. The inference was that he had an acute septic infection of his stomach. He made a good recovery.

Extragastric causes of Haemorrhage.

But the source of infection may be in various situations. An inflamed gall bladder may be associated with haematemesis.

A woman, aged 22, was admitted with grave anaemia, following haematemesis. After going into her history and observing her, a diagnosis of cholecystitis was made. At the subsequent operation

the gall bladder was found to contain pus and stones. Nothing was found wrong by external examination of the stomach. She was cured of her gastric symptoms and had no further haemorrhage within two years.

Perhaps the most frequent extragastric cause of gastric haemorrhage is a fibrous deformed appendix, the result of past inflammation.

A boy of 10 had to get up one night with an urgent desire to defaecate. He was found outside the privy door, unconscious, with vomited blood issuing from his mouth. He was brought to hospital, and made a good recovery, without anyone being able to discover what was the matter with him. A year later he was readmitted blanched and pulseless, and he vomited blood after admission. When he had recovered, it was found that he was very tender on rectal examination high up to the right. On his previous stay in hospital it had been impossible to examine his rectum owing to his struggles. At the operation a thick constricted fibrous appendix was removed. The stomach and duodenum were pronounced to be healthy. There had been no repetition of his trouble two years after the operation.

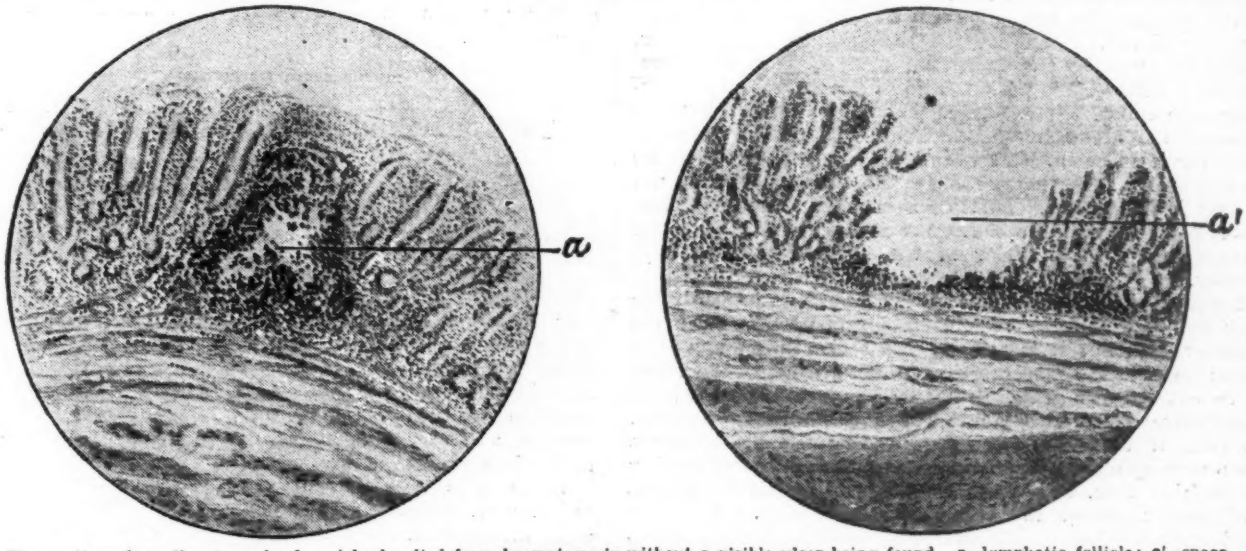
Other examples of similar cases could be quoted to illustrate the effect of extragastric disorders on the stomach. There are well known dyspeptic conditions that are dependent on the presence of an unhealthy gall bladder or appendix, of which examples have been quoted. But the occurrence of haemorrhage would suggest an anatomical connexion by which an inflammatory process could extend from an inflamed viscus to the stomach. Such a pathway is most readily provided by the lymphatics. An upward-going lymphatic tract can be demonstrated starting from the ileo-caecal angle and extending in the region of the pylorus. The spread of tubercles can sometimes be traced along this path, and the appearances of acute inflammation have been noticed by surgeons during life.

There may be similar lymphatic paths by which the stomach is connected to other viscera in the peritoneal cavity. It is well known that gastric symptoms are associated with disorders of other abdominal organs. When a definite organic change, such as leads to haemorrhage from the stomach, occurs in association with an inflamed appendix or gall bladder, it can be argued that there is not only a disordered function of the stomach set up by an extragastric disorder, but also a disordered structure which has been produced by an extension of the inflammatory process to the stomach. If such definite foci of infection as those of the appendix and gall bladder can be causes of gastric haemorrhage it is conceivable that such conditions as intestinal stasis with ptosis and other postural disorders can act in similar fashion. Very possibly such conditions as a "cesspool" colon can cause gastric ulceration and haemorrhage. Frequently gastric haemorrhage occurs in the subjects of enteroptosis, and in some of them chronic gastric ulcer develops.

It can be stated as a fact that a large number of cases of gastric haemorrhage are found among those whose primary trouble is outside the stomach. It is possible, and even probable, that the originating cause of a visible gastric ulcer lies outside the stomach, but this is a very difficult question which brings into consideration the degree of acidity of the gastric juice and other complicating factors. The following case is of interest and is suggestive.

A plump, constipated, dark young woman, aged 20, was admitted to hospital very pale and collapsed after haematemesis. She rallied satisfactorily, and was put through every form of examination. Nothing positive was found, except that the acid of the test meal was very high. She went out in good health, and three months later was sent for and another test meal done. On this occasion the acidity was normal and she was free from gastric symptoms. Six months later she was readmitted, blanched and pulseless, having vomited a lot of blood. She continued to vomit blood after admission. She made a good recovery and, in spite of the absence of any definite evidence, it was thought advisable to explore. A small duodenal ulcer was found. The ulcer was obviously recent and, as a matter of opinion, not older than a few weeks. Perhaps it would be safer to say that it was not a chronic ulcer.

It was thought that in this case haemorrhage had occurred as a result of an acute inflammation of the stomach, and that the small ulcers had healed; with the exception of the one found in the duodenum. One thing is certain—namely, the small ulcer found at operation was not the cause of her first haemorrhage.



Two sections from the stomach of a girl who died from haematemesis without a visible ulcer being found. *a*=lymphatic follicle; *a'*=space in the mucosa suggestive of a burst lymphatic follicle.

Summary as to Causation.

To sum up, gastric haemorrhage comes from gastric ulceration. The ulceration may be gross, or microscopic, or just visible—that is, it may be chronic or acute, and more frequently than is usually thought, it is acute and microscopic. In the majority of cases the ulceration follows infection and inflammation. Further, the origin of the trouble often lies outside the stomach.

Diagnosis and Treatment.

When we are faced by a patient who has recently vomited a large quantity of blood we have to treat the patient rather than the disease. It is one of the conditions in which we must treat first and diagnose later, if we can. Before we start treatment we have to consider what our aims are. We wish to improve the patient's condition, stop the haemorrhage, and prevent its recurrence. At the outset of treatment no surgical measure can be considered. First we want to ensure rest and quiet for the patient, and relief for his anxiety. The patient must be moved as little as possible; if he has to be moved to hospital, the journey should be delayed until he is well under morphine.

Morphine should be given at once, and the patient should be kept under morphine, to which atropine can be added. Perhaps after the initial dose of morphine, omnopon-scopolamine may seem advisable rather than repeated morphine. Collapse must not be too drastically treated. A certain amount of collapse is wanted so as to lower the chances of further haemorrhage. On no account

should transfusion be performed, unless a surgeon is opening the abdomen.

We have to make some sort of preliminary diagnosis. If the patient is young and well covered the condition of the stomach is probably not a chronic ulcer, and the treatment must be medical. If a history can be obtained which suggests chronic gastric or duodenal ulcer, then a surgeon should be consulted, not with a view of immediate operation, but so that he will be able to appreciate any subsequent change in the patient. If, in such a case, there is a recurrence of haemorrhage and it is thought that the haemorrhage is coming from some such vessel as the splenic vein, then transfusion of blood and exploration can take place together. But the majority of cases of gastric haemorrhage recover without the aid of the surgeon. Only in cases of repeated haemorrhage and when a chronic gastric ulcer is suspected should surgical measures be employed.

The most important question is the feeding of the patient. On this point there are various opinions. Certainly no one will object to rectal salines being given. If they are well tolerated they can be given every six hours, or the drip method can be employed. By this means thirst can be relieved. Some say that nothing, not even water, should be given by the mouth for forty-eight hours. Personally I believe this period is too long. After a haemorrhage the stomach is left in a slack state. If the blood is vomited the stomach will contract, which is a desirable state for it to be in. We cannot keep it contracted as we do the uterus after haemorrhage, but we must aim at not letting it be dilated. Dilatation is more dangerous than peristalsis. If we keep a certain amount of the digestive process going the interior of the stomach will be kept cleaner.

Further, the acidity of the gastric juice was probably too high before the haemorrhage. It may be lower after the haemorrhage, but it is probably an active juice, and it is better to give it something to digest rather than to allow it to eat its own wall. I have often given food within twenty-four hours to patients who have had haematemesis. In fact, if there has been no bleeding for twelve hours I see no reason for withholding food. The object of feeding is twofold: first, to nourish the patient so that his tissues will have a chance to heal; and secondly, to "fix" the acid gastric juice. Alkalis also should be given to neutralize the acidity of the gastric juice. While food and alkalis lower the acidity of the juice for a time, they have the faculty of stimulating a further secretion; so that treatment consists in alternately neutralizing and stimulating the secretion. This means that the patient is constantly taking something, either food or medicine.

Two names are associated with the special dietetic methods of treating gastric ulcer—Lenhartz and Sippy. As they are respectively German and American, some small modifications are desirable in their diets to make them more suitable for British tastes. But apart from these slight modifications the original diet should be closely followed. Too often one hears that the patient was treated on the lines of Lenhartz or Sippy, but without success. Failure cannot be laid at the doors of Lenhartz or Sippy, for the line of treatment will be found to have no relation to that laid down by either of them. The details of these two diets need not be given here, but the Lenhartz method is more suitable for early feeding after haemorrhage.

Drugs, in the treatment of gastric haemorrhage, have their uses in promoting rest and in lessening the activity of the gastric juice. First and most important is morphine. For peace of mind, for rest and stillness of the stomach, to allay the sensation of thirst, there is nothing to take the place of morphine. Belladonna or atropine, particularly by the mouth, lessen the secretion of gastric juice. Alkaline mixtures or powders should be given freely and regularly during treatment. The carbonates of magnesia, soda, and calcium can be used alternately with the feeds. Bismuth may be given at intervals of six hours.

Other measures have their advocates. On the analogy of the hypotonic uterus, washing out the stomach has been recommended. It is rather a trying ordeal for a collapsed patient, but possibly would do good to a patient whose stomach was distended with blood, which he was unable to vomit. However, unless a patient is dying, blood is usually vomited. Lavage then is not a method to be advised, as the passage of the tube is certain to cause tagging and straining, which will encourage further bleeding. Horse serum in various forms is recommended, but its efficacy is doubtful. Calcium has even less to recommend it. Opinions differ about opening the bowels. Some advise that no attempt be made for a week. Personally I recommend an enema or a glycerin suppository at the end of the second day, and repeating the treatment on alternate days.

After the patient has recovered from the haemorrhage full investigation has to be made into the gastric condition. In some cases there is difficulty in going further with the patient, as he may say that the haemorrhage has done him good. In some instances gastric acidity is lowered after haemorrhage, and, as many symptoms are dependent on this acidity, the patient feels better; rest in bed relieves the symptoms of many dyspeptics. But an energetic attempt should always be made to diagnose the condition which has led to gastric haemorrhage, for if the patient declines further treatment at the time he will almost certainly return at some future date on account of a recurrence of symptoms.

THE PHYSIOLOGY OF MONOTONY.

BY

R. J. S. McDOWALL, D.Sc., F.R.C.P.Ed.,
PROFESSOR OF PHYSIOLOGY, KING'S COLLEGE, LONDON;
AND
H. M. WELLS, Ph.D., B.Sc.

THE discussion at the Nottingham meeting of the Association on the subject of monotony was reported in the BRITISH MEDICAL JOURNAL on September 11th, 1926 (p. 472). Many extremely interesting views were expressed regarding the emotions which cause monotony, but apparently no suggestion whatever was made as to how it produces its deleterious effects on the individual.

While it is true that our knowledge of the subject is as yet most imperfect, it appears desirable to put forward what information there is on the matter in order to assist in the experimental investigation of what is certainly an increasingly important industrial problem. Within recent years various workers in this department have carried out researches in relation to the integration of the circulation, and considerable evidence has accumulated which indicates that certain factors are clearly concerned.

Normally, whenever any physical effort is made the circulation at once adapts itself to the demands of the various parts of the body. During exercise a definite series of mechanisms is brought into play which causes the tissues in use to be supplied with more blood. In the first instance the metabolites of muscular activity, such as carbon dioxide and lactic acid, dilate the capillaries in the tissues being used. This has recently been made clear by the work of Hemingway and McDowall. In addition, impulses passing up the afferent nerves call into operation the Lovén reflexes by which the larger vessels to the part are also dilated. At the same time the blood supply to unused parts of the body is reduced by the increased activity of the vasomotor centre. This centre has been shown by Dale and Evans to be controlled largely by carbon dioxide, and the production of this is, we know, increased in muscular exercise. Further, as a result of compression of the valvular veins, increased respiration, and the action of carbon dioxide on the venous reservoir—both directly and indirectly through the vasomotor centre—the venous pressure is increased and the heart accelerated. The total result is that in exercise the blood pressure is markedly increased.

But the adaptation of the circulation may begin before the actual commencement of the exercise. It has long been known that the heart of a sprinter is accelerated before the race, and that the respiration may be increased. Recently evidence has been obtained by Aveling, McDowall, and Wells that the blood supply of the skin, which is not called upon until sweating commences, is appreciably

reduced. This reflex, which is brought into operation in anticipation of any effort, they purpose calling the "skin constrictor reflex." The vascular change is accompanied by a fall in the electrical resistance, and has been studied under the name of the "psychogalvanic reflex," but, as recently pointed out by McDowall and Wells, there is no doubt that the two reflexes are the same. Such a diminution of the circulation through an unused part was recorded volumetrically by Mosso many years ago, but was attributed to a passive rather than an active effort.

For our present consideration it is important to emphasize that the vascular reaction may be brought about by any form of stimulation or effort, actual or anticipated, provided the stimulus is not too often repeated.

We have definitely established that as soon as the stimulation or effort becomes monotonous the vascular reactions are no longer obtained. We have indeed found in the investigation of these problems that it might be practically impossible to get rid of the effects of psychical states after a holiday, when interest in the recommencement of experimentation itself caused a marked vascular change.

A similar condition may also be seen experimentally in animals, in which it can readily be demonstrated that the increased blood pressure which results from sensory stimulation ceases if the stimulation is often repeated, although subsequent recovery indicates that there has been no actual destruction of tissue. From the work of Sherrington it is known that in reflex arcs such conditions are brought about by an increased resistance of the synapses through which the impulses have to pass.

When a certain task is uninteresting and often repeated a similar state of affairs may result. If, in virtue of the metabolites produced and the Lovén reflexes, the active tissues still demand blood while there is inadequate closing down of the unused areas, the result must necessarily be an inadequacy of the circulation to the work done. Waste products will accumulate and a feeling of lassitude, if not actual fatigue, result. This, after all, is what we feel when we appreciate monotony. We may, then, consider monotony as the reverse of emotion, not only in the popular, but also in the physiological sense. We can, indeed, extend the well known James Lange theory of emotion, in which the experience of emotion is considered to be the sensations which arise as a result of the cardio-vascular response, to include the condition of monotony, in which the vascular response is inadequate to the needs of the body. Thus the popular saying, "The man's heart is not in his work," receives physiological corroboration.

The typical instance of such effect of monotony is the staleness of the athlete or musician. Here we may imagine that repetition of the situation no longer arouses the same interest and effort, that the circulation is inadequate to demands, and the physical best is no longer obtained. It is clear that excessive repetition, which might produce nervous if not muscular fatigue, is not itself responsible for the effect, since similar conditions of repetition of a task do not produce monotony in every person. Further, as pointed out at the discussion referred to, a potentially monotonous task, which to the individuals concerned is not so, may only become monotonous when the condition is suggested by one of themselves or a visitor.

This is exactly what would be expected according to the vascular explanation of the reflex, for the normal vascular response is itself dependent on interest, and this in turn is suggested by the conditions. Hence also it is that even a task which is apparently most monotonous will produce a normal reaction in an individual who has an interest in the task—for example, by a suggested pride in efficiency—or who performs his work mechanically, and by thinking of other things supplies the necessary interest. It is well known that certain individuals prefer monotonous tasks which permit them so to day-dream. The more rapid and efficient the sense perceptions of an individual, and the richer his associations, the more likely will he be to derive interest from any work.

While it is agreed that crude muscular fatigue is almost entirely dependent on fatigue of nerve endings, insufficient attention appears to have been given to the possibility that fatigue of much lesser degree may effect all nervous synapses, and may be dependent on an inadequacy of the circulation to the demands of the task. This is suggested by the fact that whereas Forbes and Ray have shown that the nerve fibres of mammals may survive for many days *in vitro*, and Hemingway and McDowall have shown the mammalian muscle may similarly last for several days if precautions are taken to counteract the effect of the cessation of oxidation, none of these workers have succeeded in obtaining the survival of mammalian nerve endings or spinal synapses for any appreciable period (as may be done in the frog). There is very definite evidence (Gillespie, Leonard Hill) of marked circulatory response to purely mental effort, which we find may vary appreciably according to the stimulation produced by the work, its associations and surroundings.

It should, however, be noted that it is not to be expected that the performance of a monotonous task will necessarily result in a fall of blood pressure; an inadequate rise of blood pressure would produce similar results. The subject is nevertheless clearly one which requires investigation from this point of view; but, unfortunately, the mere experimental procedure of taking the blood pressure would tend to relieve the monotony of an otherwise monotonous task. It will therefore be necessary to take vascular readings over a long period until the procedure produces no reaction whatever. The work will be continued with a view to ascertaining to what extent this is possible.

CARBON MONOXIDE POISONING:

*ITS INCREASING MEDICO-LEGAL IMPORTANCE.**

BY

DOUGLAS J. A. KERR, M.B., D.P.H., M.R.C.P.Ed.,

ASSISTANT, DEPARTMENT OF FORENSIC MEDICINE, EDINBURGH UNIVERSITY.

ONE of the gravest social problems of the present day is the increase in suicide. This is not a new development, for unfortunately statistics for every decennium show an increase in the suicide rate in this as well as in other countries.

In 1883 Dr. Ogle, speaking on the chances of a person committing suicide, writes:

> "The total chance of dying by suicide is much more considerable than would probably be supposed by anyone who had not examined the question. Few, for instance, would imagine that one out of every 119 young men who reach the age of 20 dies ultimately by his own hand. Yet such is the case."

Last year, of all males over 20 years of age dying in England and Wales, one out of every sixty-five was a suicide.

A recent study of the statistics of suicide in a large city has brought out many interesting facts, which no doubt will be found to coincide with those of other large centres of population. Amongst these I have been impressed by the changing methods adopted by the suicide. In former years the most frequent methods in this country were hanging, drowning, and cut-throat. To-day the same methods, while still very common, no longer hold the first place, having given way to poisoning. The most frequent poison employed is carbon monoxide or coal gas, and in Scotland not only is it the most frequent poison but the most common of all methods of suicide. Indeed, the frequency of suicidal coal-gas poisoning has become a question which demands very serious consideration.

Professor Littlejohn, in a paper published in 1899, investigated the statistics of suicides in Edinburgh for the thirteen years 1883 to 1895. The total number was 298, and did not include a single case of coal-gas poisoning. The suicides in Edinburgh for the last six years (1920 to 1925) number 353, of which 105, or 30 per cent., were due to inhalation of coal gas. In some other towns of Scotland, I am informed by the Registrar-General, the percentage is even higher. If we differentiate the sexes, we find that 42 per cent. of women employ coal gas as the lethal method, as compared with 25.2 per cent. of men.

This increase in coal-gas poisoning is well brought out by the Registrar-General's reports for Scotland. The

* Read before the Medico-Legal Society, December 2nd, 1926.

figures of suicide for the years 1913 to 1925 inclusive being:

Year.	Coal Gas.	Other Means.	Total.	Year.	Coal Gas.	Other Means.	Total.
1913	10	267	277	1920	29	207	236
1914	6	255	261	1921	31	242	273
1915	8	229	237	1922	62	214	276
1916	10	210	220	1923	70	257	327
1917	13	194	207	1924	91	269	360
1918	18	172	190	1925	88	284	372
1919	18	216	234				

The total number of accidental and suicidal deaths in Scotland from coal-gas poisoning was 10 in 1913, and 108 in 1924. In England a similar increase is found, the number of suicides by this means having more than trebled in the last six years, being 213 in 1919, and 762 in 1925—a striking contrast to the number of accidental deaths, which has remained almost constant.

Death from "Irrespirable Gases" (England and Wales).

Year.	Suicide.	Accident.	Year.	Suicide.	Accident.
1918	276	149	1922	503	176
1919	213	121	1923	688	152
1920	270	156	1924	585	133
1921	365	150	1925	762	163

This large increase in cases of coal-gas poisoning gives rise to numerous medico-legal questions, of which one of the most important is that of accident, suicide, or murder.

Accidental death from carbon monoxide occurs in connexion with lime kilns, bakers' ovens, use of explosives, motor-car exhausts, and in many trades as well as from the domestic gas supply. Deaths from this latter source are by far the most frequent, and it is with these that the present paper deals. The following are typical cases of how accidental poisoning may occur.

A student, going to bed, hung his coat on the gas bracket. Owing to the weight of the coat the bracket cracked during the night. The student was found unconscious next morning, and died later in the day from gas poisoning.

A woman who lived alone lay down on a couch in the kitchen waiting for the water to boil in the kettle. She fell asleep, and was found dead with the room full of gas. It appeared that the kettle boiled over and extinguished the gas ring.

Again, where the gas has been turned off at the meter, a person opens a gas tap to light a stove, and finding the gas turned off at the main, fails to close the tap fully. The gas is turned on later at the meter, with fatal results. The same type of accident may also occur with the penny-in-the-slot meter.

It is by no means infrequent to see reports in the press of deaths from coal gas in houses in which there are no gas pipes, the gas from a cracked main under a tar-bound or frozen road having found an outlet through the soft ground in the basement of the house. Accident can only be excluded by the circumstances, and in some cases the answer cannot be determined. In Edinburgh during the last six years there have been only seven unquestionable cases of accident.

Suicide is very frequent, and, as a rule, circumstances exclude accident. The victims in the great majority of cases are found with their heads covered with coats or blankets, and with the tube from a gas tap brought under the edge of the covering article. In several instances persons have been found sitting in a chair with the gas tube close to or in the mouth, and still held in position by the hand; or they have been found lying on the floor with the head in a gas oven. In one case a woman was found with a mask which she had made out of a tea cosy tied over her face, the gas tube having been introduced through a hole in the top of the cosy.

It is well to remember, however, that these conditions may be simulated by a murderer. The question of possible homicide is one of great importance, and six cases were reported under this heading in the Registrar-General's (England) returns for 1925.

What is to prevent a murderer turning on the gas when his victim is asleep? When unconsciousness has developed he may lead a tube from the gas to the victim's mouth and place a covering over the head, or make some other arrangement such as is described only too frequently in the newspapers. In this connexion a case which occurred this year is of interest.

A labourer employed in working down a well was found dead in bed. As in the case of all sudden deaths in Scotland, the matter was reported to the police for investigation. Professor Littlejohn, who examined the deceased on their behalf, was struck with the very pink colour of the *post-mortem* lividity. The Procurator Fiscal was informed, and ordered a *post-mortem* examination in view of a probable fatal accident inquiry being held. The examination showed that death was due to carbon monoxide poisoning. The man's wife stated that he had complained of a smell of gas in the well, and that his clothes smelt strongly of gas when he returned from work. On further investigation it was found that the man left his work at mid-day on Saturday, returned home for his dinner, and was seen walking about the town in the afternoon and evening. The family heard him return home about midnight, and move about the kitchen, where he slept alone. The kitchen contained a coal fire and also a gas ring, and he had apparently cooked himself some supper as was his usual custom. Next morning at 7 o'clock his wife entered the kitchen to prepare breakfast, but stated that she noticed no smell of gas, nor did she find the gas tap turned on. Thinking the deceased was asleep, she left him until 11 o'clock, when, on trying to wake him, she found that he was dead.

The question arose, Was this a case of accidental death from exposure to coal gas at his work; was it suicide, or a case of homicide; or, as we shall consider in a moment, was this a case not of coal-gas poisoning, but of *post-mortem* development of nitroxyhaemoglobin to which Haldane has drawn attention.[1]

An estimation of the percentage saturation of the blood was made by Hartridge's reversion spectroscope, which excluded the last-named possibility. The saturation was found to be over 70 per cent. We know that in cases of poisoning by carbon monoxide where the person is unconscious, the carbon monoxide is eliminated from the blood when the patient breathes fresh air, and after five or six hours only an infinitesimal amount is present; this man, therefore, who was seen and heard going about twelve hours after leaving his work, and who never complained of breathlessness or other symptoms, could not have contracted a saturation of 70 per cent. from the well, as this would have been eliminated many hours before, not to speak of the fact that a much lower saturation than 70 per cent. causes unconsciousness. We are therefore forced to the conclusion that the man became unconscious in the atmosphere that contained the carbon monoxide which poisoned him. There can be no doubt that he was gassed in the dwelling-house.

Whether this was a case of homicide or, as would appear more probable, one of suicide, is a matter of conjecture, since police and other inquiries could not get evidence to enable any criminal charge to be made. I believe a claim for compensation was made by the family and settled out of court, the employers preferring this to having any suspicion raised that their well was contaminated with coal gas.

This case illustrates most of the medico-legal questions arising from carbon monoxide poisoning—namely, (1) the possibility of mistaken diagnosis; (2) the toxicity and amount of saturation of the blood required to produce unconsciousness; (3) the time elapsing before a person becomes unconscious; (4) the rate of elimination.

With regard to the first of these questions, as to the possibility of any other condition being confused with carbon monoxide poisoning, Haldane reported a case in 1925 where the verdict at the inquest was given as "carbon monoxide poisoning contracted during employment." This when investigated proved to be due to a condition which had developed after death—namely, the formation of nitroxyhaemoglobin, a substance which gives the *post-mortem* appearances seen in carbon monoxide poisoning, and which gives similar reactions with the usual

tests, such as a pink colour on dilution, Kunkel's tannic acid test, and the spectroscopic test. Carbon monoxide poisoning and nitroxyhaemoglobin can, however, be distinguished by boiling a dilute solution of the blood, or by means of an instrument devised by Hartridge, known as the reversion spectroscope, which is used as one of the methods for estimating the percentage saturation of the blood with carbon monoxide.

This *post-mortem* condition of nitroxyhaemoglobin is rare, and the circumstances are sufficient to exclude it in most cases. In a very small percentage of instances, however, such as the case of the labourer working in the well referred to above, the possibility may arise, and in such circumstances care must be taken to exclude it.

Carbon monoxide gas unites with the blood much more readily than does the oxygen of the air, and causes death, not by any toxic action, but by depriving the tissues of the oxygen which it has displaced. Sometimes the patient survives for several days, and samples of the blood after a short time show no evidence of the presence of carbon monoxide. Death in such cases results from cerebral softening—an after-effect of the acute anoxaemia.

The symptoms caused by a given percentage saturation of the blood vary with the individual and the rapidity with which the saturation has been produced. Distinct symptoms of weakness and malaise are present with a saturation of 50 per cent.; between 50 and 55 per cent. any exertion such as walking is difficult, and above this unconsciousness is produced. When the accumulation in the blood is rapid, such as occurs when air containing a large amount of carbon monoxide is breathed, the saturation required to produce the above symptoms will be less.

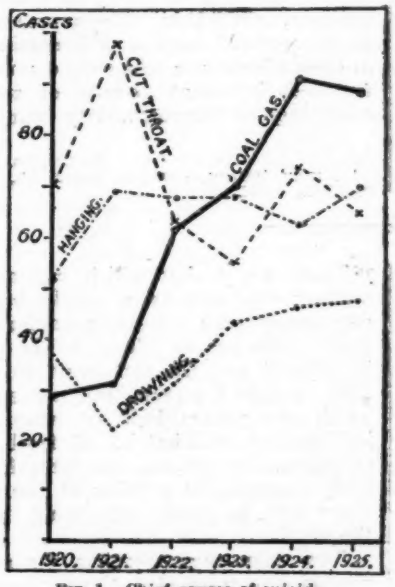


FIG. 1.—Chief causes of suicide, Scotland.

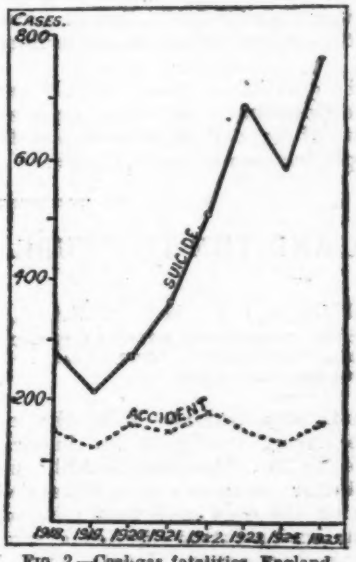


FIG. 2.—Coal-gas fatalities, England and Wales.

The rapidity with which carbon monoxide accumulates in the blood varies with the amount of the gas present in the air. An individual breathing an atmosphere containing 1 per cent. of carbon monoxide will have 50 per cent. of carbon monoxide in his blood in fifteen or sixteen minutes. Exposure for twenty minutes is thus approximately the time required for unconsciousness to develop with this percentage in the air. If a person puts his head in a gas oven he will be breathing almost pure coal gas, which in Edinburgh contains at present 22 per cent. of carbon monoxide. Under such conditions unconsciousness will theoretically occur in about thirty seconds.

The rate of elimination of the gas after the patient has been removed from the atmosphere of carbon monoxide is also of importance from the medico-legal standpoint. Henderson[2] has shown that for the first hour and a half the elimination is small, but after that becomes rapid, and, provided the patient lives, all the carbon monoxide should have been eliminated in from five to six hours.

In the case quoted by Haldane, to which reference has been made, the verdict of carbon monoxide poisoning at the inquest was founded on the bright pink colour of the blood seen at the *post-mortem* examination, and on the positive results obtained from the usual tests for carbon monoxide. Fourteen days had, however, elapsed before death occurred, so that in this case it is evident that the appearances and positive tests could not have been due to carbon monoxide gas. Had the above facts connected with gas poisoning been more widely known this mistake could not have occurred.

The increasing frequency and the various medico-legal problems associated with carbon monoxide poisoning have been briefly considered; it is now necessary to discuss whether anything can be done to limit its occurrence.

The poisonous element in coal gas is the carbon monoxide, most of which is added in the form of water gas for the purpose of increasing its heating properties. Yandell Henderson,[3] in an article on poisonous gases, stated:

> "It is well established that the number of deaths each year in any city due to its illuminating gas rises in direct proportion, or even in more than direct proportion, to the amount of carbon monoxide in the gas. In those cities where coal gas of low carbon monoxide content is supplied asphyxiations are few. In New York City at the other end of the scale, where the gas contains nearly 30 per cent. of carbon monoxide, the number of deaths from carbon monoxide asphyxiation runs up toward 500 a year."

In this country Dr. Stevenson, representing the Registrar-General's department, giving evidence before the Departmental Committee on Carbon Monoxide Poisoning in 1921, stated that "The death rate from accidental coal-gas poisoning for towns where water gas was added to the gas was two and a half times higher than for towns in which none was supplied." It is evident that the percentage of carbon monoxide in the gas affects the death rate from coal-gas poisoning.

In the last five years there have been two Government inquiries into deaths from coal gas—one in 1921, the other in 1924. Both these inquiries have, however, been limited to accidental deaths, the increase of which, they state, has only been slightly above the proportional increase in the number of premises supplied with gas.

The 1924 committee reported that the question had been considered solely from the standpoint of the risk of accidental poisoning, and concluded that a limitation in the proportion of carbon monoxide in lighting gas would cause very little reduction in the number of accidental deaths, and would gravely disturb the economic factors which govern the price of gas, the reason for this opinion being apparently because the majority of accidental deaths occur in bedrooms during the night, and the victims are subjected to prolonged exposure. From the accidental point of view any alteration in the composition of the gas supplied does not appear to be a practical proposition, and, in any case, the rise in the number of accidental deaths is not very great.

In February of this year the Parliamentary Secretary of the Board of Trade referred to the 1924 report, in answer to a question in Parliament as to whether he would cause inquiry to be made into the deaths from carbon monoxide poisoning. He stated that the position was being watched, and that during 1925, in the area supplied by the three London gas companies, there were twenty-seven such deaths in which either an open verdict or a verdict of accidental death was returned. This is not an alarming number. We have, however, to add to this 153 suicidal deaths of which no mention was made.

It is to the prevention of suicidal poisoning that I desire more particularly to direct attention. It may be said that if one method is removed a suicide will find another. That this may be so is beyond dispute, but there are many cases in which suicide would not be attempted if some difficulty was placed in the way of employing a particular method. The temptation of an easy means at hand is often the deciding factor. As an instance of this, suicides were very

frequent some years ago from a well known bridge in Edinburgh which had a low parapet and might almost be said to invite suicide. The parapet was raised and crowned with sharp spikes, with the result that no suicide has occurred there since.

We have seen that carbon monoxide is a cumulative poison, and that fatal results will occur with even small amounts in the atmosphere provided the exposure continues for some time. Would a reduction in the amount of carbon monoxide in lighting gas, and thus a prolongation of the time necessary to produce a fatal result, be of any use? In a number of cases it would result in the person being found before it was too late. This is shown by the fact that of eighty-two admissions to the Royal Infirmary, Edinburgh, of lighting-gas poisoning in the last six years only six have died. On the other hand, a suicide frequently tries to make certain of a speedy result by covering his head with blankets, or putting his head inside the gas oven, etc., and so artificially raises the concentration in the atmosphere he breathes. In such circumstances, it must be admitted, reduction in the carbon monoxide content would not have much effect.

The question of limiting the amount of gas supplied by means of a penny-in-the-slot meter is likewise of little advantage, as I have seen fatal results in cases where such meters were in use. 'Approximately 25 cubic feet of gas are obtained for a penny, which, if it contained 20 per cent. carbon monoxide, would give 5 cubic feet of carbon monoxide—a quickly fatal concentration in an ordinary sized bedroom.

It seems a pity that the question of suicide should have been eliminated from the Government inquiries, especially in view of the statements of Yandell Henderson and Dr. Stevenson, and of the rapid increase in suicidal cases.

In considering the question of the limitation of suicide we must not confine ourselves to a discussion of the composition of gas, but must consider any other methods which are applicable. There is no doubt that a large number of cases of suicidal gas poisoning are due to the publicity given to this matter by newspapers. As I mentioned before, suicides are easily influenced by example and suggestion. A suicide occurs by some unusual means which is reported in the press, and is quickly followed by another in which the same means are employed. An example of this occurred recently in Edinburgh, where two men cut their throats, and then jumped from a viaduct into a river below, within a few days of each other.

Not infrequently the relatives state that the deceased had remarked on similar suicides which he had read about in newspapers. There can be no question that the publication of details and reports of inquests in cases of suicide does a great deal of harm. A few months ago these cases were broadcasted in the evening news bulletins, but fortunately the B.B.C. eliminated such items when their attention was directed to the grave results of such publicity.

Legislation has recently been proposed to suppress the publication of certain classes of divorce court proceedings. It is surely of greater importance to suppress reports of suicides, which constantly remind unfortunate individuals of the ease and certainty of death as a way out of their troubles. Whether the suppression of publication of suicides would have any beneficial effect on the number of cases of coal-gas poisoning cannot, of course, be definitely asserted, but that absence of such details would be an advantage to the community cannot well be doubted.

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[1] BRITISH MEDICAL JOURNAL, August 1st, 1925, p. 187. [2] Ibid., January 9th, 1926, p. 41.

BILHARZIA OVA AND THE TEST TUBE.

BY

J. B. CHRISTOPHERSON, C.B.E., M.D., F.R.C.P.,

PHYSICIAN FOR TROPICAL DISEASES, FREEMASONS' HOSPITAL; PHYSICIAN TO OUT-PATIENTS, CITY OF LONDON HOSPITAL, VICTORIA PARK; LATE SUDAN MEDICAL SERVICE.

THE statement that antimony tartrate kills the ova deposited in the tissues during treatment for bilharzia disease has been assailed by Dr. Mohamed Khalil,[1] who states that the action of tartar emetic in curing bilharziasis is not due to its effects on the eggs, and that miracidia are not affected by tartar emetic in the dilution approximating to that used during treatment. Lately, Captain W. H. Dye[2] has said more specifically: "I cannot agree that the ova are killed by tartar emetic." In view of the fact that there is general agreement that antimony, both *in vitro* and *in vivo*, kills the parasite* which produces the ova—a fact contested for some time—the question of the effect of antimony on the ova might appear of no great importance; it is, however, important, for if the ova are not killed, they will leave the bladder or rectum and continue to infect the intermediate hosts, and the drug is not so great a prophylactic agent as is claimed; further, if antimony has no therapeutic effect on the ova we lose a reliable method of observing the results of the action of antimony during a course of treatment.

Certain facts with regard to the ova during the administration of antimony tartrate can be made out by anyone who has a microscope and a patient with bilharzia disease. They occur in rectal and in vesical infections; they are obviously more easily observed in the urine than in the faeces. A specimen of the urine of a moderately severe case of bilharzia disease is cloudy and contains blood—macroscopic or microscopic; if it be allowed to stand for half an hour in a conical glass the sediment at the bottom will be found to contain ova, most of which are more or less transparent, showing the miracidium usually with the anterior end at the extremity which is not spined. The outlines of primitive embryonic organs will be easily seen within the miracidia; these are live ova and comprise by far the greater portion.

There are a few which appear shrunken with double contour replaced by a single bounding membrane. The contents of such ova are granular, without shape or form, dead; some are calcified. If the urine containing the ova be diluted and the temperature of the solution raised to 110° or 120° F., most, but not all, of the living ova will hatch out within half an hour; none of the granular-looking ova will hatch. If fresh specimens of urine are examined day by day the same facts will be noticed with little change, the number of the ova varying, but always there will be dead and living, the living outnumbering the dead.

Now commence treating the same person with intravenous injections of antimony tartrate. After a few days the urine will clear perceptibly, the blood will diminish, and blood obvious before to the naked eye is now obvious only under the microscope. It will be noticed that the number of ova in the urine has sensibly diminished. A decisive action has taken place, which has affected the number of ova and has diminished the blood in the urine.

These facts can only be logically explained by assuming either that the antimony is acting on the ova, or that its action on the female worms causes them to lay fewer eggs.* Continuing the injections every other day, the improvement is maintained, the local symptoms are relieved, and there is less pain, less frequency, and less difficulty in micturition.

Still continuing the injections, the initial dose of half a grain is increased by half a grain each succeeding dose according to rule, to the maximum dose of 2 or 2½ grains, which is then continued. On the eighth or ninth day of regular treatment a definite and increasing change in the character of the ova can be observed. Many containing well formed miracidia hatch slowly or not at all on the addition of water, while increasing numbers of ova show granular and degenerated miracidia. In fact, from the

* Recently Fairley has revived the theory that the action is a specific one on the female worm (he admits a definite action on the ova). It is difficult to understand why the antimony should affect female rather than male parasites as Fairley suggests, or why, acting on the female, the latter should continue to lay dead or addled eggs. One can understand the female being affected by the antimony and laying no eggs at all. This Christopherson has suggested as a reason why ova are scanty during treatment.

ninth day onwards ova appear in the urine, which, owing to the action of the antimony tartrate, have become granular and black. By the end of a fortnight's treatment about half the ova discharged are obviously dead; many are quite opaque.

On about the twentieth day of treatment all the ova coming away will be dead; none will now hatch out on diluting and warming the urine, and if the adult worms are killed, as is probable, live ova will not reappear in the urine. The injections commenced early to affect the ova. The first action of the antimony *in vivo* is observed by testing the physiological function of hatching; as more injections are given the ova are increasingly affected and fewer living ova are found; lastly, the parent worms are killed and living ova no longer appear in any circumstances but reinfection. I think it is impossible to maintain that this sterilization change in the ova is not the direct result of the antimony injections. Other drugs also kill the ova, but no drug deals with bilharziasis so completely as antimony tartrate, because none have so great parasitotropic action and so little organotropic in comparison.*

These are changes which must be observed *in vivo* with the parasites in their natural media; they cannot be adequately studied in the test tube, nor can test-tube observations, however accurate and in many respects valuable, take the place of clinical experience. In support of this, if support be needed, we might contrast Dale and Dobell's[4] experience with *Entamoeba histolytica* and emetine *in vitro* with the clinical results obtained with the same drug.

H. B. Day[5] investigated a series of 1,000 cases at the Kasr el Aini Hospital, Cairo, and published carefully drawn charts to show the effect of antimony on the ova. He found that the ova of bilharzia *in vivo* are very susceptible to antimony; a short course of four injections will kill them, the effect being seen after about nine days, and it is the same when the doses are continued; it is evident that it is the small dose acting over a prolonged period which kills when antimony is given in clinical practice. When only small doses are given for two or three days dead ova appear after the ninth day, and the effect reaches its maximum on the fifteenth day, after which living ova become more and more numerous Thus a very little antimony given kills the ova, but the worms revive and recommence laying. We have actual proof that antimony in a short course does not kill the worms till later, since Day found living worms at a *post-mortem* examination of a patient who died of an intercurrent disease after a short course.

It has been said by way of objection that granular ova occur in bilharzia cases not undergoing treatment. This is true, but the sudden diminution in the number of living ova coming through after a few days of antimony administration, and the cessation of pain and blood, and the clearing of the urine can only be explained satisfactorily by supposing that antimony has already attacked the ova and paralysed them, or that the worm is under the influence of the drug and therefore is not laying. The ova no longer penetrating the mucous membranes of the bladder in such numbers there is less cause for haemorrhage, and the urine becomes more acid and natural in appearance.

Further, if the dead ova in a case undergoing treatment are counted and the number compared with the number of live ova, it will be found to be out of proportion to the number of dead ova coming through in a case not receiving treatment. This points to the fact that it is the ova which are killed by the antimony. These shrivelled ova whose double contour is replaced by a single outline, the miracidia within replaced by a shapeless granular mass, always opaque, generally appearing black by transmitted light, are not capable of hatching in any circumstances. The foregoing facts may be verified by anyone with a patient and a microscope.

* One could understand a parasite laying one dead egg or two, which would correspond to abortion in a human being, but is it a biological fact that tartar emetic makes the parasite continue to lay dead ova? In other words, is not the action of the tartar emetic a direct one on the ova as they lie in the tissues?

Both Day and I, however, obtained in addition results with watery solutions of tartar emetic which showed that there was a distinct, though retarded, action by the antimony on the ova *in vitro*. In order to imitate natural conditions more closely the former also experimented with saline solutions. Day pointed out that work *in vitro* has its limitations. A time limit is imposed, since the ova are not in natural surroundings; they are, in fact, in contact with infected liquids, the ova being recovered from urine which is more or less contaminated with bacteria, whilst when living in the tissues they are bathed in serum—a benign medium from which the ovum derives its nutrition. By using serum for the medium the results of experiments on the ova *in vitro* might possibly have been still more striking.*

I submit, therefore, that *in vitro* experiments also prove the direct toxic effect of antimony on the ova. They further suggest that the phenomenon of hatching of the bilharzia ova is a vital process, not governed exclusively by physical laws, for whereas antimony appears to have a profound effect on the live ovum, it apparently has no effect on the dead ovum.

The action of antimony on the living ova is real, an early manifestation, and only second in importance to the action of the antimony on the adult worms, which it kills later. The action on the ova and on the adult parasite makes antimony the most valuable therapeutic agent we have in bilharziasis, and probably one of the most complete remedies in our therapeutic armoury.[10]

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THE OSCILLOMETRIC EXAMINATION OF ARTERIAL PERMEABILITY.

BY

A. P. CAWADIAS, O.B.E., M.D.DURH. AND PARIS, M.R.C.P.

FORMERLY CHIEF OF MEDICAL CLINIC, BEAUJON HOSPITAL, PARIS, AND SENIOR PHYSICIAN AND LECTURER ON CLINICAL MEDICINE, EVANGELISMOS HOSPITAL, ATHENS.

IT is often necessary in clinical work to determine the state of permeability of the arteries of the upper or lower limbs. In obliterating arteritis the need for determining the presence of an obliteration, its degree, its localization, and also the condition of the collateral circulation, is frequently felt. In arterial or arterio-venous aneurysms it is necessary to know if the limb is receiving a normal blood supply. In diabetes, in arterio-sclerosis, and in other morbid conditions the degree of permeability of the arteries of the limbs—especially of the lower limbs—is important from the points of view of diagnosis and prognosis. There are not many clinical methods which assist in answering these clinical problems. Digital examination of the radial or the femoral artery or the dorsalis pedis does not give very definite results. The Moschcowitz and Matas tests, which utilize the degree of the hyperaemic blush following artificial ischaemia caused by the application of an elastic bandage, also fail to give very definite results, and are not without danger in their application.

In 1912 I introduced the oscillometric method for the study of arterial permeability.[1] It is based on the use of Pachon's oscillometer, and has been developed in France by a great number of workers—principally by Heitz,[2]

* Tartar emetic was shown recently by Fairley[7] to be relatively innocuous to bilharzia cercaria in aqueous solutions, but it developed marked lethal properties in the presence of human serums derived from both normal and bilharzia patients

Guyot and Jeanneney,[3] Pagniez,[4] Gosset, Rénon, and others. An excellent review of this method has been given by Gallavardin[5] in his standard work on the arterial pressure, and by Pachon[6] in a paper on the oscillometry. If the work of Matas[7] be excepted, this method of examination is not used extensively in English-speaking countries. Buerger, in his review of the circulatory disturbances of the extremities, does not appear to have followed the literature on this subject, although for the diagnosis of the syndrome of arterial obturation and of thrombo-angiitis obliterans the oscillometric method is, in my opinion, very valuable.

The Method.

Pachon's oscillometer shows the oscillations of the arterial wall under progressive pressure with great accuracy. Fig. 1 shows the oscillations obtained after the armlet has been inflated until no oscillations are shown on the dial of the oscillometer. If the air is allowed to escape very gradually by the valve of the apparatus, and the index of the dial which indicates the oscillations is watched, at first a series of small and equal oscillations, which are called the supramaximal oscillations, are detected. Then comes an oscillation distinctly differing in its extent—the "differentiated oscillation." The oscillations continue to increase progressively and then diminish, and there may therefore be detected the maximum oscillation (MA) and immediately after this maximum oscillation the first descending oscillation (DF). By allowing the air to escape gradually small oscillations are reached once more, and the terminal oscillation (TE) may be determined.

Pachon, his pupils, and various other clinicians use the oscillometric method for the determination of blood pressure. The differentiated oscillation corresponds for Pachon to the systolic pressure, and the degree of this pressure is shown by reading the manometer of the apparatus. The first descending oscillation (DF) indicates the diastolic pressure.

For the application of the oscillometric method to the study of arterial permeability the two oscillations—DI and DF—necessary for the determination of the blood pressure need not be considered, but the three other oscillations—the initial oscillation, IN, the maximum oscillation, MA, and the terminal oscillation, TE—must be determined. More precisely we must try to determine: (1) the degree of pressure under which the initial (IN) and terminal oscillations appear; (2) the extent—in divisions of the dial of the oscillometer—of the maximum oscillation. This last determination, Pachon's oscillometric index, is the most important. This point should be thoroughly understood, and there must be no confusion between the application of the oscillometer for the determination of the blood pressure in general and its application for the determination of arterial permeability.

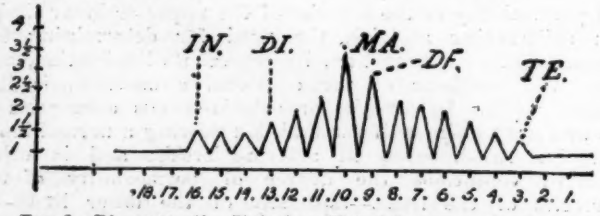

FIG. 1.—Diagrammatic clinical oscillometric curve, showing the oscillations as obtained in progressive decompression of the armlet of the oscillometer. The horizontal line indicates the pressure as read in the manometer. (For the corresponding English divisions a zero—must be added. Example: 18 is 180 mm. of mercury, 13 is 130 mm. of mercury.) The vertical line indicates the divisions of the dial measuring the extent of the oscillations. IN=Initial oscillation. DI=Differentiated oscillation. MA=Maximum oscillation. DF=First descending oscillation. TE=Terminal oscillation.

If the whole oscillometric curve be determined, or, more simply, if the numbers of the manometer corresponding to the three oscillations under consideration—the initial, the maximum, and the terminal—be noted, it will be found that under normal conditions in the upper limbs the initial is at about 15 or 16 (150 to 160 mm., using the mode of notation customary in England), the maximum extends to 2 or 3 degrees of the dial, and the terminal is found at about 6 or 7. The simple mode of notation 15–3°–7 is here adopted. In the lower limbs the initial is found at about 18, the maximum oscillation extends to 3 or 4 degrees, and the terminal oscillation is also found at about 7 or 6. Adopting the simple notation this may be stated for the lower limbs as 18–4°–6.

This is, of course, schematic because there are many individual variations, and in order to appreciate the differences in the oscillometric curves indicating arterial permeability, it is best to compare the oscillometric curves obtained in different arterial segments by applying the armlet of the oscillometer in various positions on the upper and lower limbs. A special "armlet" has been constructed by Boulitte for the thigh.

In cases of diminished arterial permeability of an artery of the limbs what may be called the oscillometric curve

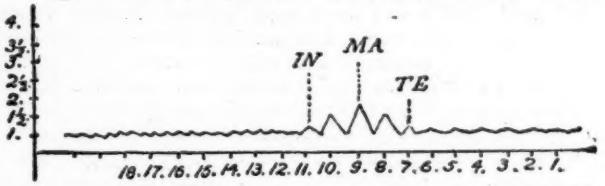

FIG. 2.—Oscillometric curve of arterial obstruction. IN=Initial oscillation. MA=Maximum oscillation. TE=Terminal oscillation.

of arterial obstruction is found (Fig. 2), in which the initial oscillation appears at a lower pressure (say 7), the amplitude of the maximum oscillation is diminished (for example, to half a degree of the dial), and the terminal oscillation appears at a higher pressure than normally (say 6). This curve indicates that the oscillations of the arterial wall appear later, finish earlier, and are of less amplitude than normally. In other words, as Gallavardin puts it, the "pulsatility" of the artery is diminished.

Clinical Application.

1. The oscillometric examination of arterial permeability helps in determining whether obliteration exists, and thus in diagnosing whether a syndrome of intermittent claudication is due to an arterial obliteration or to a nervous cause (medullary intermittent claudication, a syndrome of the initial period of Erb's spastic paraplegia).

K. shows a definite symptom-complex of intermittent claudication. Oscillometric examination of the arterial permeability in the two lower limbs 12–1–6; in the two upper limbs 15–4–10. This patient had syphilis and certain difficulty on walking. The onset of a nervous spasmodic syphilitic paraplegia was suspected, but the oscillometric method allowed the diagnosis of the arterial origin of the disturbance to be made, and this diagnosis was confirmed at *post-mortem* examination, which showed the presence of big plaques of atheroma of the two external iliac arteries, almost completely obturating these vessels.

S., a diabetic, complains of numbness in the lower limbs and certain difficulty in walking. The oscillometric exploration shows low numbers for the left lower limb and less low for the right lower limb. This enabled the diagnosis of arterial origin of these disturbances to be made, a diagnosis which was confirmed by the appearance during the next year of early gangrene of the left toe.

When the collateral circulation is good, even although a main artery is obliterated, the oscillometric results are not abnormal findings. A negative result must not be considered, therefore, as absolute.

2. The oscillometric method allows the course of the disease and the effect of treatment to be followed.

K., aged 30, seen in Paris in 1910. Oscillometric mensurations: lower right limb 14–2–6, lower left limb 7–1/2–4; upper limbs 14–3–9. After a series of treatment in Royat he was examined two years later. He felt considerably better. Oscillometric mensurations of lower limbs: right 15–2–9, left 9–1/2–5. This satisfactory condition did not persist long, and after two years the readings for the upper limbs were 14–3–9; lower right 14–2–9, lower left 6–1/2–5. One year after no oscillation was detected in the left lower limb.

3. The oscillometric method enables a diagnosis to be made between arterial obliteration due to spasm and that due to definite organic obstacles. As Heitz has shown, when it is caused by spasm a hot local bath brings back normal oscillometric readings.

4. Oscillometric exploration allows the localization of the obliteration to be determined; the obturations curve being found precisely at the region of the obturation and under that region.

5. Oscillometric estimations have been applied to the examination of the arterial circulation in cases of arterial

and arterio-venous aneurysm by the author, as well as by Gosset, by Matas, and by Rénon.

M., Colonel in the Greek army, wounded at Kilkis, and showing an arterio-venous aneurysm in the right axilla. Oscillometric examination of the forearm: left 14–2–10, right 10–1–7. Two weeks after operation by Professor Gosset the initial oscillation was–12. Ten months after it was 13–2–8. The radial pulse could not be felt; oscillations were therefore due to collateral circulation.

This method also shows if a collateral circulation persists in a limb after extirpation of an arterial aneurysm. This is done by taking the oscillometric readings before and after compression of the artery under the aneurysm. If the oscillometric readings are good after compression, extirpation can be applied without danger.

6. Lastly, oscillometric examination will demonstrate the obliteration of a radial artery by an aortic aneurysm or by a tumour of the mediastinum. The involved artery will show the oscillometric curve of arterial obstruction.

Summary.

Pachon's oscillometer is a very simple clinical instrument and easy to apply. With a little practice anyone can determine the state of the permeability of the tibial artery, of the femoral artery, of the artery of the forearm, and of the brachial artery, and thus study an important element of the peripheral arterial circulation of the patient.

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THE TREATMENT OF BURNS.

BY

D. MACKENZIE, M.B., CH.B.GLASG.,

SOUTHERN GENERAL HOSPITAL, GOVAN.

THIS note is the outcome of fourteen months' experience as house-surgeon in burns wards. There every known method of dealing with the primary shock and in the aseptic and antiseptic treatment of the burns was tried.

During the last five years I have used as a routine Wright's hypertonic saline (NaCl), with its recognized valuable results[1]; this in association with more active measures is the keynote of the method.

The line of treatment advocated is active surgical intervention, and consists of the immediate removal of all dead tissues under a general anaesthetic—preferably ether. The appreciation of what may be termed the demarcation line is soon acquired. My approach towards this appreciation was the removal of the dead tissue in fourth and fifth degree burns on the seventh day, at which time natural separation is appreciable, and thereafter proceeding in subsequent cases to earlier and eventually earliest removal. The degree of appreciation is not important, provided the error, if any, is on the side of free removal. The aim is the formation of a surgical field, and free removal, both at the skin and deep margin, is indicated. The presence of dead tissues results in toxaemia from the absorption of the products of autolysis, and usually a degree of septicaemia at the sloughing stage. To avoid this is the chief purpose; complete removal leaves a surgical field with the subsequent healthy granulation tissue of aseptic surgery.

The instruments used in the removal of dead tissue are razors, amputation knives, Volkmann spoons, heavy curettes, different types of scissors, toothed dissecting forceps, haemostatic forceps, etc. Where bone is involved the appropriate instruments are added. The solution employed is hypertonic (NaCl). When demarcation has been exact there has been no danger of haemorrhage from oozing with applications of 5 per cent. hypertonic saline, or, where oozing is extensive, 2 to 3 per cent. In no case has there been haemorrhage. The gauze is wrung out of the hot saline and applied in close contact to the raw surface, layer on layer, and covered with wool. Jaconet is used as a covering where modification of the hypertonicity and the nature of the field might result in a painful adherent dressing. The gauze is removed by warm saline, irrigation, as distinct from soaking, being employed. At a later stage in the repair, the stage where physiological saline is replacing hypertonic, "V" flap perforated silk is interposed to guard the granulations if required. The question of dressing daily, or twice daily, is particular to the case. Within a few days parts of the field are in most cases ready for pinch-grafts, provision for which should be made at the operation. When dealing with the skin margin, shelving of the margin is adopted, but at different parts small portions of the skin are left jutting towards the raw area, and these portions, when required, are readily removed by scissors curved on the flat. General pinch-grafting is governed by absolute freedom from dead tissue or sepsis and by the degree of granulation desired to replace loss of tissue. Dead tissue which may have been missed at operation should be dealt with by sharp scalpel or razor; for smaller portions the virtue of hypertonic saline need not be enlarged upon. A bland ointment is used to protect the rapidly germinating epithelium, otherwise physiological or hypertonic solutions of NaCl are employed throughout.

The question of how early the operation should be performed has to be viewed in relation to the degree of primary shock and the degree of difficulty which may be met with in estimating the line of demarcation at the particular site of the burn. Undue delay, on the other hand, must be guarded against on the following grounds. The active measures taken in combating the shock—the electric cage, pituitrin, camphor, ether, brandy, etc.; intravenous saline, rectal injections of saline, glucose, essential oils, etc.; analgesics such as morphine, nepenthe, etc.; the various types of soothing applications, aluminium acetate, picric acid, protective wax preparations, etc.—were in part nullified by the rapid absorption of the autolytic products, this absorption from its toxaemia sustaining the shock.[1] There is also the possibility that the autolytic processes in burns modify locally the natural efforts of repair, with a resultant change in the characteristics of the fibroblastic tissue. The ground for such a belief is the modification of the scar tissue, so frequently met with in burns, ranging as it does from hypertrophic scar tissue, keloidal to keloid, which, although regarded as an individual idiosyncrasy, is nevertheless most common in burns. It must be remembered too that equally severe shock is met with in other circumstances where immediate operation is indicated. There is also the stimulating effect of ether administration, and during this intravenous saline and other shock-combating treatment may be carried out. Post-operative treatment is attended to as in other surgical cases. Lastly, there is the psychological effect on the patient when the nausea of scorched flesh is replaced by the sense of comfort from the soothing aseptic dressings, painlessly applied. The necessity to operate at a later stage, when the patient is exhausted from toxaemia, if not by septicaemia, is avoided. The convalescence, characterized by asepsis and a rapid rate of healing, is considerably shortened and is free from discomfort.

The flexible type of scar tissue resulting from this procedure, with its potentiality for plastic considerations and minimum of contractures, lessens disfigurement. The nature also of the repair process prevents the former bugbear of burns repair. This was the terminal patch usually found at the summit or centre of the field. It was due to the inequality of repair rate at the deep and superficial parts of the scar, the contraction of the deep tissue interfering with the blood supply of the patch. The result was that this area might resist all methods of healing, including grafting, and take on a malignant character. Such a malignant ulcer is not infrequently seen on an old burn scar when it has broken down from stress or trauma. Similarly the treatment lessens the possibility of hypertrophic scar tissue. The absence of keloidal or keloid tissue in the cases dealt with must at present be regarded on the score of the patients' freedom from such idiosyncrasy. The

particular value of flexible scar tissue at the flexures of the body and at tendinous areas need not be mentioned.

In large voluntarily supported institutions the economical aspect—the saving in time and material—is also a consideration.

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TREATMENT OF ENCEPHALITIS LETHARGICA ASSOCIATED WITH PARKINSONISM BY ULTRA-VIOLET RAYS.

BY

RICHARD FAWCITT, M.B., CH.B.ED.,

HONORARY SURGEON, ULVERSTON COTTAGE HOSPITAL.

MY object in publishing these few cases is to interest those members of our profession who are not yet acquainted with the possibilities of treatment of this unhappy condition by means of ultra-violet rays. I cannot claim that this line of treatment works miracles, but in some cases it appears to be definitely beneficial.

Some months ago I treated a case of chronic ulcerative tonsillitis by means of ultra-violet rays (mercury vapour lamp); as the tonsils healed quickly, and a persistent rhinitis cleared up also, I was led to think that the local application of ultra-violet rays to the mucous surfaces of the nose and throat might be beneficial in encephalitis lethargica. On June 8th I began to apply it to cases to which I was already giving general ultra-violet rays with what, I think, is a certain measure of success.

My technique, except in Case 5, consisted in stripping the patients in the usual way and application of the multiple carbon arc lamp, back and front, for gradually increasing periods up to half an hour, according to the patient's capacity, twice weekly. In addition to this, local treatment was given to the mucous surfaces of the nose and tonsillar area by a mercury vapour lamp with adaptor for a period of not exceeding two minutes to each area.

The points which seem most noticeable are: improvement in gait, feeling of well-being, diminution of salivation, and relaxation of the fixed expression of the face.

Case 1.—A schoolmaster, aged 33. The onset of the disease occurred two years before he was sent to me in April, 1926. Parkinsonism was well developed; he was unable to do anything for himself. The multiple carbon arc lamp was used twice weekly. After the third application he was able to turn over on the couch; after the fifth he walked much better; after the eighth he was able to help to dress himself; his facial expression also improved very much. On May 22nd he was sent to Birmingham to Dr. Eden for lavage of his sphenoidal sinus, etc.

Case 2.—A schoolboy, aged 14, contracted the disease a year previous to coming to me on April 16th, 1926. He was in a very poor condition—was extremely breathless on going upstairs, and the journey of eight miles in the car upset him very much; his heart was considerably dilated. He had three applications, but died suddenly in his own home four days after the last application.

Case 3.—A coppersmith, aged 42, had had the disease for two years before coming for treatment on April 16th. His improvement has been very marked from the commencement, particularly as to his expression, feeling of well-being, and locomotion. On June 8th, in addition to his general treatment by means of the multiple carbon arc lamp, I gave him short local applications to the nose and throat by means of an adaptor fitted to the mercury vapour lamp; this was continued twice weekly, and has appeared to be very beneficial. He is much straighter in posture, and can use his hands much better.

Case 4.—A joiner, aged 42. Onset of disease two years previous to coming for treatment on April 16th, 1926. The Parkinsonian syndrome was present, but not so well developed in this case; salivation was very troublesome. He also had very marked stiffness of the jaw. He ceased to come on July 27th, but was considerably improved; his jaw is still very stiff, and he is having difficulty in eating.

Case 5.—A married woman, aged 38, in whom the disease first appeared two years previously. She was delivered of a healthy female child (still alive and well) a week after the onset. Came for treatment on April 16th, 1926. She was treated throughout by means of the mercury vapour lamp, local and general, and her condition is much improved.

Case 6.—A labourer, aged 32. Duration of disease fifteen months. He had very marked tremors, and used to get up from bed to come for treatment. He showed some improvement, but not much. He ceased to come June 28th, and has since been confined to bed. I am inclined to think that this is a case of disseminated sclerosis. He came on April 16th, 1926. Same treatment as above.

Case 7.—A fruiterer, aged 19. Onset of attack two years previously. His gait and posture were very bad; there was much salivation. The posture and gait have much improved, and he is much freer from salivation. He was very mischievous when he first came, but his demeanour is much improved. He came on April 16th, 1926. Same treatment as above.

Case 8.—An insurance agent, aged 49. Date of attack indefinite, but he had been going downhill for six months, and had developed Parkinsonism. Treatment was started on July 14th, 1926, and the patient shows considerable improvement.

Case 9.—An engine-driver, aged 60. Duration of disease three years. He came once, but did not like the treatment, and would not come again.

BREATHING EXERCISES WITH MOVING ARMS.

BY

HORACE HILL, M.B., B.S., M.R.C.P.,

SURGEON COMMANDER, R.N.,

R.N. SCHOOL OF PHYSICAL AND RECREATIONAL TRAINING.

SOME systems of physical training still advocate the movements of the arms during a breathing exercise.

Arm movements hamper the expansion of the thorax and the descent of the diaphragm. As soon as the arms are raised the movements of the thorax are lessened, in order that it may supply a steady base on which the arms can pivot; also to supply a fixed base for the muscles which arise from the chest and are attached to the arms to work from. In addition the shoulder girdle has to be moved. Besides the arm group other muscle groups are immediately contracted. The supporting groups of muscles, which keep the body in position while the heavy arms are moving, come into play. The muscles of the leg contract to steady the pelvis, in order that the spine and thorax may be supported on it, and not be swung off their balance by the heavy arms.

The fixation of the pelvis enables the abdominal muscles to contract and hold the thorax firm; this prevents the ribs from rising. If, in addition, the head is thrown back, as is usually recommended, the abdominal muscles can be seen and felt to be rigidly contracted. This effectually prevents the descent of the diaphragm. The spirometer and x rays confirm these statements. Keith, in a Hunterian Lecture, says that arm movements increase the pressure in the abdomen. This also impedes the diaphragm.

The mere fact that no gross movement in these abdominal muscles may be seen does not prove that no contraction is taking place. The thin muscle fibres of voluntary muscle supplied by the sympathetic non-medullated nerves may be very strongly contracted without gross evidence to a casual eye, but it can be felt. (Compare the rigidity of the rectus abdominis.)

Nobody would advise the performance of a breathing exercise with a half-pound dumb-bell in each hand. Yet the addition of half a pound to the many pounds weight of each arm would not add much to the total weight which the body has to manipulate. The weight of each arm can be realized by holding it out at right angles to the body for a moment or two. If the weights of dumb-bells are gradually increased to a maximum, the full effect of weights (such as the arms) pivoting on the chest can be observed.

The contraction of the arm muscles spreads not only to the supporting groups—those of the legs, back, and abdomen—but to the whole musculature of the body. Even the jaw and facial muscles are involved. So fixed does the thorax become that breathing is entirely suspended, the chest and diaphragm cease to act. The weight of the arms alone has this effect of hampering the respiration, the dumb-bells only intensify it. The weight of the arms is unbearable to anyone in a condition of respiratory distress. Such interference with respiration also impedes the circulation. Neither, when the arms are raised, can any pull occur on the ribs to elevate them, any muscles tending to oppose the raising of the arms being elongated and their tone inhibited (Sherrington's proprioceptive reflex and reciprocal action of antagonistic muscles).

Exercise of the thorax for normal breathing can best be brought about by graduated runs in the open air. After running, if the respiration is left to itself the movements of the thorax and diaphragm will be abundant and natural.

The arms should not be moved. The respiratory muscles and apparatus have been exercised day and night since birth and well know how to breathe. Breathing is entirely self-adjusted and requires nothing more than to be saved from interference.

No artificial exercises, unless a lesion is present, whether they cramp the chest or not, can possibly improve on this self-adjustment possessed by every human being, inherited through many ages. Also, artificial exercises designed to strengthen the muscles of the chest are not breathing exercises. We do not breathe by muscular strength.

Bankart, in his article on physiology of muscular action (*Proceedings* of the Royal Society of Medicine, November, 1925), says, "There is too much arm and leg wagging in the scheme of most gymnasts."

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

COINCIDENT HERPES AND VARICELLA.

THE two following cases, both occurring in the same family, of a definite herpes associated with chicken-pox, are of interest in view of a possible common origin of the two conditions.

The elder child, a boy aged 10 years, on December 21st, 1926, had shooting pains in the right side of the chest, and several raised red spots were noticed by the parents along the line of about the seventh rib. During the following two or three days other spots appeared at intervals over the chest, back, and forehead; there was no complaint of pain.

The younger child, a boy aged 4 years, on January 6th, 1927, had slight malaise, followed the next day by red papules on the chest and back. At intervals on succeeding days others appeared. On examination on the third day of illness there was a typical rash of varicella on the chest and back, showing the vesicles in various stages of development, while on the back of the right hand there was typical herpes over the distribution of the radial nerve to the thumb and first finger. The elder boy then showed the remains of the chicken-pox rash, and in addition several larger scabs along the line of the seventh dorsal nerve, which were the result of the herpes.

It is interesting to note that the herpes and varicella appeared almost at the same time in both cases.

E. E. OUSELEY-SMITH.
Birkenhead. G. WILLIAMSON.

HEREDITARY HAEMORRHAGIC TELANGIECTASIA.

THE following case is reported as one of an unusual hereditary condition of the venules and capillaries of the skin and mucous membranes.

A man, aged 38, came under treatment for advanced pulmonary tuberculosis of some five or six years' duration; he gave a much longer history of recurring epistaxis. He had numerous telangiectases on the lips, which he stated had existed since he was about 15 years of age; they appeared one at a time, but all, he thought, within two years of each other.

Some years later similar spots appeared on the nose and cheeks, and about the same time he noted the same condition on his tongue. Fifteen years ago he began for the first time to be troubled by occasional attacks of epistaxis, which have become much more frequent within the last few years, and were of almost daily recurrence. The spots from time to time became more prominent and more palpably raised, and looked bluer; he thought that this was most frequently observed in the morning, and more especially if he had been drinking the night before. Ordinarily if he cut himself he did not bleed much, but if one of the telangiectases was cut the haemorrhage might continue for hours. Within the last two years he had noted two or three spots on his penis, on the dorsum of the glans.

In addition to the spots noted on the lips and face the patient had a number on the nasal septum, on the anterior two-thirds of the tongue, on the inner aspect of the gums, and on the soft palate. The spots were bright red and, except at certain times, were not palpable. They consisted of a cluster of dilated venules or capillaries, which lay immediately under the surface layer of the epithelium.

The family history is interesting. The patient's grandfather had the same condition, as had also his father and two of his uncles. One sister was also affected, and it had appeared in three cousins; one of the affected cousins died at the age of 28 from a "ruptured vessel in the brain." The patient had seven children—the oldest being 15—but none of them nor any of his sister's children were, so far as he could tell, affected. In all the members of the family in which the condition has been present the onset of the disease was about the age of 15.

C. M. Williams[1] has collected thirty-two cases and added five of his own. The essential features of the cases mentioned by him are the same as in the case here reported—namely (1) the appearance of the telangiectatic spots at puberty; (2) the familial nature of the condition; (3) the marked tendency to haemorrhage; (4) the distribution of the spots especially about the nasal and buccal cavities.

I am indebted to Dr. Elder for allowing me to record this case.

Edinburgh. ERIC C. MEKIE, M.B., Ch.B.

PULMONARY EMBOLISM FOLLOWING CHILDBIRTH.

THE cases reported by Dr. McCulloch and Dr. Young under this title (November 6th, 1926, p. 835) induce me to record two cases in my own experience.

The first was that of a primipara, aged 22, in whom labour had been quite normal; she was attended by the district nurse; I saw the placenta, which was intact. All went well until the fourteenth day, when, as she was getting up (her husband being in the room), she suddenly felt a severe pain in her side and slid down to the floor gasping for breath; her husband said "her face turned blue," and he put her into bed and rushed out to get help. On my arrival I found that he had not exaggerated her condition; she was cyanosed, breathing with difficulty, and evidently in great pain. I could find no sign of disease in lungs, pleura, or heart, and I knew that her history was free from serious disease. I remembered that I had read in the late Dr. Galabin's book an account of pulmonary embolism as a cause of pain, and frequently death, in parturition and child-bed, also a lecture by Professor Briggs on the same subject, so I put a mustard plaster on her side and gave a hypodermic injection of morphine hydrochloride 1/4 grain; she shortly became easier. She was ill for two or three days, and then gradually got better; a thrombosed left femoral vein was found on the day after her sharp attack, which produced a white leg and was treated in the usual manner. She was allowed up at the end of seven weeks and has since had no ill effects. She had no rise of temperature the whole time.

The second case occurred five years ago. The patient was a primipara, aged 19; labour was protracted owing to the size of the child, which weighed 9½ lb. I had to use forceps, and the perineum was lacerated; it was sutured and healed by first intention. She was very restless, and used to shuffle herself about her bed even when I was in the room. The temperature was not raised and all went well up to the eighth day, when I found her normal at my morning visit. In the afternoon I was hurriedly sent for, the messenger saying "that her mother thought that the patient was dying." On arrival I found a similar picture of distress—a "blue patient," gasping for breath and giving instructions to her mother to "take care of the bairn." I had a vivid remembrance of the former case, and gave her a hypodermic injection at once; as soon as she seemed easier I felt for the femorals, but could find no trace of clot, nor did I find any clot on successive days. However, to be on the right side I kept her in bed and gave her citrates. She made an uneventful recovery and has had two more children since. The second child, only 6 lb. in weight, was born without the nurse or myself being called. The third child weighed 8 lb.; delivery was somewhat slow, but otherwise normal. She passed through her lying-in periods without incident.

PERCIVAL HENDERSON, M.D.,
Seghill, Northumberland. L.R.C.P., L.R.C.S.

EXCISION OF PROTRUDING PORTIONS OF THE LIVER.

A YOUNG native man, while celebrating a harvest festival with numerous potations, made an amateur attempt at hari-kari by stabbing himself in the abdomen with a long knife. From this wound, which was directed from above downwards, that portion of the liver which lies towards the left, and beneath the left lower margin of the sternum, protruded to the extent of six inches in length by four inches in breadth.

As the patient had come a long way (three days' journey on foot) it was impossible to think of replacing the gland within the abdominal cavity; three ligatures were passed round the pedicle of the protruding portion of the gland, clip forceps were also fixed at this point, and the entire mass was cut away close to the parietal rent. The abdominal wound healed by first intention, and the patient made an uneventful recovery. The operation was bloodless.

C. R. HOBART TICHBORNE.
Dar-es-Salaam, Tanganyika Territory.

[1] *Arch. Derm. and Syph.*, July, 1926, p. 1.

Reports of Societies.

THE ANTITOXIN TREATMENT OF SCARLET FEVER.

AT a joint meeting of the Section for the Study of Disease in Children and the Section of Medicine of the Royal Society of Medicine on February 25th, with Dr. J. D. ROLLESTON (President of the former Section) in the chair, a discussion was held on the antitoxin treatment of scarlet fever.

Dr. E. W. GOODALL, opening the discussion, did not claim to speak authoritatively, but would assume that the haemolytic streptococcus described by the Dicks was the cause of scarlet fever. Clinicians were not so favourably placed with regard to the antitoxin for scarlet fever as were those who had been called upon to express an opinion on antidiphtherial serum thirty-two years previously, for the type of scarlet fever was very mild at the present day, and the case mortality rate had not been above 2 per cent. in London since 1910. There was not much scope for the saving of life by anti-scarlet fever serum, and in addition the septic complications of scarlet fever removed it at once from the pure toxaemias, such as diphtheria. Dr. Goodall said it was difficult to ascertain if antitoxin treatment caused any improvement in case mortality rates even in parts of the world with high rates. In Montreal, for example, a rate of 5 per cent. became lowered to 3.2 per cent. Then convalescent serum was used, and the rate was 2 per cent., and finally, with the introduction of antitoxin, it had become 1.2 per cent. Mostly, however, the efficacy of scarlet fever antitoxin was judged on other grounds. It was found to produce a rapid fall in temperature, disappearance of delirium, fading of rash, and more rapid improvement in the general condition of the patient. Just occasionally cases did not respond. The earlier the serum was given the better the results, and if not employed until the fifth day or later favourable effects were not obtained. Dr. Goodall then dealt with 56 cases in which he had personally employed antitoxin. He pointed out that he had selected his cases, the more severe types receiving serum, and that the number was too small for definite conclusions to be drawn. Four patients died: one from bronchitis, one from septic complications, one from endocarditis, and one from pyaemia occurring in the puerperium. In 35 cases considerable improvement resulted in a couple of days; the bulk of these patients had received antitoxin on the first or second day of the attack. Dr. Goodall had come to the conclusion that a prima facie case had been made out for the efficacy of the serum, and that better results were obtained the earlier it was given. The good results obtained with multivalent antistreptococcal serum in the past were probably due to the fact that such serum contained antitoxin from the scarlet fever organism. With regard to dosage, methods of standardization were uncertain. He usually gave about 50 c.cm. of unconcentrated serum, preferably intramuscularly in one dose. He had had 24 cases of serum sickness in his series.

Dr. R. A. O'BRIEN mentioned reports by fever hospital medical officers outside London. Concentrated serum in doses of 10 to 20 c.cm. had been stated to have a definite beneficial effect in the mild and moderate cases of scarlet fever, but did not seem to touch the septic type of the disease. Serum treatment was thought to be well worth while, and seemed to have an indirect effect on the septic element of the disease, reducing complications. Dr. Rundle of Liverpool had reported the use of serum in 100 toxic cases in which the patients would probably have succumbed without it. Five deaths occurred, all in a group of twenty-five of the septic type. Dr. O'Brien then described five methods of standardization. In the first toxin and antitoxin were mixed until no reaction was obtained in a Dick-positive subject; there was too wide a margin of error in this method. A second method involved the use of goats, but had not received much attention. The third method was to test the amount of antiserum required to blanch the rash of scarlet fever. The fourth method involved determining the quantity of serum necessary to turn a "Dick-positive" person into a "Dick-negative," and keep him so. The fifth method was the outcome of recent work by Parish and Okell, who found that a culture of the scarlet fever streptococcus injected into rabbits killed them in two to three days. Concentrated anti-scarlet fever serum protected these rabbits, and the action was probably specific, although polyvalent antistreptococcal serum protected in 50 per cent. of cases, probably owing to the amount of anti-scarlet fever serum it contained. Dr. O'Brien discussed the polyvalent serum, which many years ago gave good results in scarlet fever cases, and then appeared later on not to be so efficacious. This he believed was due to the fact that whole-broth cultures were at first used for injecting horses, while later washed cultures of streptococci grown on solid media were employed. The broth in the early cases would contain scarlet fever toxin. Lastly, Dr. O'Brien mentioned the close relation of all the haemolytic streptococci to each other. The toxins of the streptococcus responsible for tonsillitis, for puerperal sepsis, and for erysipelas would kill rabbits, but these could be protected by scarlet fever antiserum in percentages far outside any chance result. It was therefore to be hoped that other forms of streptococcal infection might be combated by scarlet fever antitoxin.

Dr. F. FOORD CAIGER said that with the low case mortality of scarlet fever at the present day there could not be much indication of saving of life. He referred to attempts made in the past by pathologists to produce a serum against scarlet fever, and thought that the results of the present day did not greatly exceed the success of the older workers. In particular some work in Warsaw in 1894 with multivalent serum was worth remembering, and it closely anticipated more modern researches. Dr. Caiger inquired if in septic cases there was no other organism responsible; he thought that it was not the Dick streptococcus which was found in the circulation in these cases. It would probably be wise to use multivalent serum in addition in these septic cases. Dr. Caiger finally referred to some serum supplied to him by Besredka thirty-two years previously, which he had used in cases of scarlet fever which he thought would prove fatal. In 44 such cases the mortality was 36 per cent., and he was convinced that the serum was valuable if used early.

The PRESIDENT emphasized the fact that scarlet fever had become progressively milder in type in this country of recent years. He referred to certain figures published in the *Bulletin Internationale d'Hygiène Publique*, which showed that scarlet fever still had a high mortality rate in south-eastern Europe. He agreed that antitoxin should not be given to mild cases, for in addition to the question of expense there was the danger of serum sickness and of a troublesome hypersensitiveness. He had used the serum in a few cases in doses of 10 to 30 or 40 c.cm. He thought that even if serum was used cases could not be discharged earlier without a bacteriological examination of the throat, since some observers had said that the organism persisted for even six weeks.

Sir FREDERICK ANDREWES had been much interested in the "overlap" of antitoxic serum prepared against scarlet fever and other streptococcal infections. It raised the question as to whether there really existed a sharply defined disease which was called scarlet fever. Cases occurring after burns and after operations aroused the gravest doubts as to where streptococcal infection began and scarlet fever left off. The bacteriological evidence presented similar difficulties, since there appeared, from serological evidence in this country, to be three varieties of streptococci found in the throats of scarlet fever patients. It was probable that different races of streptococci produced the same common toxin, as occurred in the case of the tetanus and diphtheria organisms.

Dr. A. JOE compared his experience in Edinburgh and in London, emphasizing the mild nature of the disease in the south. He had not seen one septic case in five months in London, and, on the other hand, serum sickness had been much more troublesome. He referred to the use of the older multivalent serums, and pointed out that blanching of the rash in scarlet fever had been obtained with such serums in pre-Dick days. He agreed as to the "overlapping" of the streptococcal serums.

Dr. J. McCARTNEY mentioned the difficulties associated with examining throats for organisms before discharge of scarlet fever patients. He also had observed the "overlapping" of the streptococci. He thought that much could be learnt by studying the organisms responsible for the cases in which anti-scarlet fever serum failed to produce any effect.

Dr. E. J. PARISH referred to his experiments with rabbits injected with scarlet fever toxin intravenously. Toxins from the organisms causing erysipelas and puerperal fever had not given such satisfactory results. After neutralization of the scarlet fever toxin by injections of antiserum the rabbits nearly all developed joint lesions with pus formation later. Haemolytic streptococci were obtained from this pus. In the rabbits injected with puerperal toxin joint lesions occurred earlier.

TREATMENT OF CANCER OF THE BLADDER.

A MEETING of the Urological Section of the Royal Society of Medicine was held on February 24th, with the President, Mr. W. GIRLING BALL, in the chair; Mr. HENRY WADE (Edinburgh) read a paper on the treatment of malignant disease of the bladder.

Mr. Wade, in a preliminary survey of the surgical treatment of carcinoma elsewhere in the body, deduced certain principles which he considered should be applied to the treatment of malignant disease occurring in the bladder. He deplored the failure of radium and deep *x*-ray therapy, and insisted that at present the only rational line of attack was by means of the knife. The ideal was excision of the growth with as much of the surrounding tissue as possible. It was not always possible to estimate with any degree of accuracy the size and extent of the growth during the preliminary examination of the patient. Frequently when a bladder was opened carcinoma was found to extend further than had been suspected by cystoscopic examination. Moreover, histological examination of excised papillomata often showed that what had appeared clinically to be an innocent growth contained an area of malignancy at its base. This did not, however, necessarily mean that treatment of such papillomata by diathermy would fail. The lesson to be drawn from the observation was rather that in dealing with papillomata, whether by diathermy or by excision, the treatment must be exceedingly thorough if recurrence was to be avoided. Mr. Jocelyn Swann had shown in his presidential address to the Section that no sharp line could be drawn between non-malignant and malignant growths of the bladder, and for this reason innocent growths should be treated by free excision where possible, as though they contained elements of malignancy. In this procedure resection of the ureter was a common necessity and presented no particular difficulties. It was indeed surprising how rapidly a mutilated bladder recovered, and how soon the remaining portion compensated for what had been lost. A more difficult question to decide was the treatment of malignant disease of the bladder of such an extent that removal required the transplantation of both ureters. Many surgeons thought that total cystectomy was unjustifiable; he, however, believed that this operation had a very definite place in genito-urinary surgery. Before removing the bladder it was necessary to make provision for removing the urine by transplantation of the ureters, either into the bowel or to the surface. Work at the Mayo Clinic had shown that if both ureters were transplanted into the bowel at the same operation there was some danger of suppression of urine caused by post-operative oedema at the site of operation. It was seldom possible, however, in the case of malignant disease of the bladder to carry out transplantation in two stages, since the patient was in a precarious condition and time an all-important consideration. In his own cases Mr. Wade had brought the ureters to the surface of the abdomen and had relied on various mechanical devices for keeping the patient dry. In achieving this the chief difficulty arose from the fact that an appliance which kept the patients dry when standing generally failed when the patient assumed a sitting or recumbent posture. Much ingenuity had been exercised in attempting to overcome this difficulty, but the ideal method of collecting urine from a ureter implanted on the surface of the body had yet to be found. The operation of total cystectomy presented very few technical difficulties once the ureters had been satisfactorily transplanted. In the four cases in which he had employed it he had removed the prostate and vesicles as well as the whole of the bladder, since he had found that it was easier to include these structures than to leave them behind. Moreover, it not infrequently happened that growths in the bladder extended into the prostate. Of the four patients treated by total cystectomy two were still alive, and two had lived for a period of two years. Even though the operation had not been curative in these two patients their end had been far more comfortable than if no operation had been performed. For this reason he believed that total cystectomy was justified even when the extent of the growth was such that a complete cure was unlikely or impossible. In conclusion, Mr. Wade said that he was aware that he might be accused of holding heroic views on the subject of total cystectomy when he urged that it should be employed, not only in cases in which there was a reasonable hope of extirpating the growth, but also in those in which this was clearly impossible. No one, however, could view the sufferings of a patient dying from malignant disease of the bladder and the failure of all palliative measures to mitigate these without being prepared to go to any length in his attempt to find a remedy. The technique of total cystectomy was capable of great improvement, and he could foresee the time when with improved methods surgeons would carry out total removal of the bladder as a routine measure. He could even imagine the operation being resorted to either as a palliative proceeding in inoperable cases or as a measure of security in those cases which at present were dealt with by subtotal excision.

In the ensuing discussion the following took part: Mr. GIRLING BALL, Mr. SWIFT JOLY, Mr. KENNETH WALKER, Mr. CYRIL NITCH, Mr. MORSON, Mr. MACALPINE, Mr. FOWLER WARD, and Mr. R. OGIER WARD.

ORAL SEPSIS AND SKIN DISEASE.

AT a meeting of the Section of Odontology of the Royal Society of Medicine on February 28th, Dr. H. W. BARBER read a paper on the relationship of dental infection to diseases of the skin, discussing the subject under two heads: (1) the coincident surface infection of the skin and of the oral and naso-pharyngeal mucous membranes, and (2) the secondary effects of such infection upon other organs of the body—that is, focal sepsis and its results.

Both the skin and the oral mucous membrane had, he said, what might be regarded as a natural flora of microbial organisms, but in health the various species of organisms occurred as isolated units, not in a state of active growth; they were, therefore, saprophytic, not parasitic. Under certain conditions they took on active growth, invaded the tissues of the host, thus becoming parasitic, and (to a varying degree, according to the species) pathogenic. In the skin the common organisms were the "bottle-bacillus" (probably a yeast), which grew in the horny layer, producing dandruff; the acne bacillus, which flourished in the pilo-sebaceous follicles; and staphylococci, particularly *Staphylococcus albus*. In the oral mucous membranes the most important were various strains of streptococcus. Dr. Barber suggested that the underlying conditions which favoured the active growth of these different species of organisms in the skin and mouth were metabolic or biochemical in origin. As regards the skin, seborrhoea—or rather the seborrhoeic state, of which seborrhoea was one of the manifestations—predisposed to the active growth of these three types of organisms. This state was an index of faulty metabolism, apparently associated with the excessive formation and inadequate excretion of acids of the fatty-acid series. It was presumably the excretion of these acids through the sebaceous and sweat glands, and probably through the skin as a whole, that favoured the active growth of organisms which were either not present, or existed as isolated units only on normal skin. The chief etiological factors considered to be responsible for the seborrhoeic state were: (*a*) heredity, (*b*) diet, (*c*) faulty

hygiene—for example, insufficient muscular exercise, lack of fresh air, excessive clothing, insufficient fluid intake—(*d*) the stresses of sexual evolution. Of these the most important were (*b*) and (*c*), particularly a want of correlation between diet and physical exercise. Excessive intake of carbohydrate, especially of soft fermentable starchy foods and concentrated sweetstuffs, and, to a less extent, of fats, was the chief dietetic error responsible, combined with an insufficient intake of fresh vegetables and fruit. The same dietetic faults were also held largely responsible for the active growth of micro-organisms in the mucous membranes of the mouth and naso-pharynx, and the invasion of the tissues by them, and clinically a liability to seborrhoeic infections of the skin was found to be associated with a similar low resistance to infection of these mucous membranes, resulting in dental caries, gingivitis, pyorrhoea, and naso-pharyngeal catarrh. Dr. Barber therefore suggested that measures ought to be taken, in the interests of national health, to reverse the present economic policy as regards foodstuffs, which, on the whole, rendered the most harmful articles of diet the cheapest, whereas fresh fruit and green vegetables were relatively among the dearest.

Once active microbial invasion of the tissues had taken place there resulted, not only the local, but also the remote, effects of such invasion, owing to the absorption of toxins or the escape of micro-organisms into the lymphatics and blood stream. The most important pathogenic organisms concerned in so-called focal infection or sepsis and its secondary complications belonged to the streptococcal group. With regard to oral sepsis, the effects of gingivitis, pyorrhoea alveolaris, and apical infection had to be considered. Of these probably the last was the most potent as a cause of systemic disease. The diseases of the skin which might be caused directly or indirectly by oral sepsis could be classified as follows:

1. Diseases due to direct spread of infection from the oral mucous membrane to the skin—for example, impetigo contagiosa, streptococcal fissure, perlèche, and relapsing streptococcal lymphangitis.
2. Diseases in which oral sepsis by its effect on the digestive processes, by setting up an infective gastritis and by causing a secondary infection of the intestinal tract with acid-producing organisms (such as streptococci), thus favouring fermentation, might play a causative part—for example, rosacea.
3. Diseases in which the presence of an infective focus in the mouth lowered the resistance of the patient to pyogenic infection of the skin—for example, boils.
4. Diseases in which the epidermis became sensitized to toxins absorbed from the mouth and teeth—for example, eczema.
5. Diseases which might be regarded as true anaphylactic reactions due to systemic sensitization to bacterial protein—for example, urticaria, angio-neurotic oedema, certain mixed erythemato-urticarial eruptions.
6. Diseases in which the toxins from an infective focus acted on the nervous or endocrine-sympathetic systems, the changes in the skin being secondary to such involvement—for example, herpes zoster, alopecia areata, vitiligo, scleroderma, Raynaud's disease, and some forms of prurigo.
7. Diseases due to inflammatory reactions produced in the skin as the result of bacterial embolism in the dermic or subcutaneous vessels, or by the action of bacterial toxins carried to the skin in the blood stream—for example, erythema multiforme, erythema nodosum, lupus erythematosus.

Professor J. W. EYRE said that seeing, as he did, the results of treatment instituted by Dr. Barber, where so much of the primary sensitization had been due to some bacterial source, he had been impressed by the close association between sepsis in the mouth and these skin lesions. Dr. Barber did not speak of sepsis attacking a live tooth and being a cause of skin disease; it was a kind of superstition that living teeth could not have apical suppuration associated with them, but many of the cases they had seen together showed this to be a fallacy. In most instances of skin affections the bacterial side could be divided into one of two groups: the patient had either oral sepsis or intestinal sepsis, and the latter might be secondary to the former. Thus the conclusion was enforced that the dental surgeon played the biggest part in preserving the nation as a whole from skin diseases. He agreed with practically all Dr. Barber said.

Mr. A. T. PITTS suggested that there was considerable doubt about the apical lesions of which Dr. Barber spoke so certainly; the dental profession was still much in the dark as to their nature. The *x* rays had shown that areas of apical rarefaction were very common, and it was usual for medical men to refer to them as abscesses. He asked whether it was safe to assume that all these apical conditions were such pathological constants as they were assumed to be. Sometimes the same appearances were observed in connexion with living teeth, but radiological technique might be defective. In some of those cases abscesses were found, in others masses of granulation. The granuloma might not be so much an evidence of infection as something in the nature of quarantine, thrown up by the body as a defence against infection in the tooth.

Mr. J. G. TURNER asked whether it was contended that a healthy person did not suffer from skin disease. He did not see the force of associating seborrhoea with dental disease, seeing that the latter might start in earliest childhood. The question of dental disease in Britain seemed to be summed up in the fact that we ate bread. With regard to the question of calcium deficiency, most people who were supposed to have this deficiency had an ample quantity of tartar on their teeth. Decomposing food was always to be found in close association with ordinary teeth, and this decomposing product must either be swallowed or absorbed, and so was a possible source of detriment to health. He also asked what was the value of reflex irritation as a cause of skin manifestation.

Dr. E. W. FISH said one would imagine that sensitization of the skin would take place as easily from a carious tooth as from an apical abscess. He saw no reason why the toxins from a carious cavity should not be absorbed by the lymph stream from the dentine of a tooth which was normal except for the caries. He would be interested in a further exploration of the association of dental caries with skin diseases. In both apical abscesses and dental caries it was a question of ulceration of epidermal tissues, and when the ultimate pathology of skin disease and that of dental caries had been fully worked out it was likely there would prove to be many points of similarity. At present there was somewhat of an obsession that the causation of dental caries was purely saprophytic.

Mr. F. N. DOUBLEDAY spoke of the possibility of the bone being a source of skin and other troubles in patients who were edentulous. Sometimes if bone was cut down upon in the areas which *x* rays showed were rarefied it would yield a pure growth of streptococcus.

Mr. W. A. BULLEID said he had seen many of the patients referred to in Dr. Barber's paper, and he was able to speak of the remarkable results which had ensued from a combination of the efforts of the dental surgeon, the dermatologist, and the bacteriologist. The most satisfactory results seemed to have been achieved in cases in which the infection was of the closed type, rather than the open. Usually one was quite safe in condemning apical sepsis as being responsible for some systemic disturbance in the patient. He mentioned a remarkable case of urticaria of ten years' standing, the patient being a woman 45 years of age, with, in addition, hypertrophic gingivitis. A pure culture of *Streptococcus viridans* was obtained. Following treatment, the urticaria disappeared for four months. When it returned, cultures having been kept of the case, she was vaccinated. That took place six years ago, and there had never since been any return of the trouble.

Dr. BARBER, in reply, said that Professor Eyre and he had had many cases together in which not the teeth but the tonsils, the naso-pharynx, or the sinuses were the seats of the septic trouble. He had an objection to advising removal of people's teeth if there was any means of conserving them, for, however skilful the dental surgeon might be, there was something definitely lacking about a plate. Even with all the aid now given by *x* rays the problem was not always solved. In answer to Mr. Turner, he (the speaker) did not mean to contend that everybody who had dental decay or dental sepsis was necessarily seborrhoeic; what he meant was that the lowered resistance to infection in the mouth very often caused a lowered resistance in the skin too, and vice versa. He could scarcely recall a patient with really bad chronic seborrhoea who had not also

a severe infection of the mouth, and dental decay from early years. With regard to the bearing of calcium deficiency on the problem, he remembered a remark made by one of the Mayo brothers when in this country, to the effect that it would be found that practically the whole of medicine would be found to be a question of calcium metabolism. He had himself been investigating a number of cases from that standpoint, and with very interesting results. The recent or mild cases of seborrhoea did not usually show any calcium deficiency. He thought it quite possible that absorption of toxins could take place from carious teeth, but he had no experimental evidence to support it. Infection from dental plates was probably a question of the person swallowing the material and setting up a focal infection in the intestine secondarily.

DISEASES CARRIED BY MILK.

AT a meeting of the Section of Comparative Medicine of the Royal Society of Medicine on February 23rd, with the President, Sir D'ARCY POWER, in the chair, Mr. G. P. MALE read a paper on cow's milk as a factor in the transmission of certain diseases to man (excluding tuberculosis).

Mr. Male said he did not propose dealing with all the diseases which might be contracted by man as a result of drinking cow's milk. The danger from tuberculosis was so thoroughly established that there was now no doubt of its seriousness, but many other diseases were not so well demonstrated, and there was still room for further investigations. Now that the Milk and Dairies Consolidation Act (1915) was in operation the subject was of importance to both medical and veterinary practitioners. The powers conferred on medical men to stop the supply of milk from suspected dairies was not confined to tuberculosis, but also included acute mastitis, anthrax, foot-and-mouth disease, actinomycosis of the udder, any comatose condition, and septic condition of the udder or teats which might cause disease. The Milk and Dairies Order of 1926 required notification of any infectious disease in persons engaged in handling milk. Veterinary surgeons were required also to examine cows to ascertain whether any disease liable to infect man was present. Unfortunately this inspection had not been made universal, and so some of the benefits of the Act were lost.

Anthrax was usually so fatal that the bacilli were as a rule not present in the milk before death. Sometimes, however, animals did not die from the disease, and so fever in cows should cause careful observation of such animals to be made. Very few deaths had been recorded from anthrax conveyed by milk, but dangers from this source did exist.

Actinomycosis of the udder was relatively rare, and could often cause infections.

Foot-and-mouth disease, though common in this country, had only rarely been reported as affecting man here. Many outbreaks had been reported from the Continent, however, from infected milk.

Acute mastitis and suppuration of the udder were conditions which should always cause the withdrawal of milk. There was, however, great difference of opinion as to the pathogenicity to man of many of the organisms found in less severe cases. Streptococci were the most frequent organisms found, although others were also implicated; and in this way septic sore throat, scarlet fever, and other conditions had been traced to disease in cattle. There seemed to be general agreement that it had yet to be proved that the common streptococci found in milk were the same as those causing septic sore throat. The causal organism, however, of this condition might be carried passively by the milk from one person to another.

Cow-pox was very common in Britain. This eruptive disease affected chiefly the teats and udder, the general health of the cow being usually unaffected. Eruptions formed locally, became elliptical vesicles, which about the tenth day matured and became pustules. These fell off in about three weeks and left a scar. These might become infected with secondary organisms, and the primary changes, not having been noticed, confusion with other conditions might result. The disease was easily transmitted to man, and Mr. Male had seen severe eruptions due to this cause, in some cases leading to septicaemia. Children were sometimes infected by drinking milk, but without serious results.

Contagious abortion was very common in this country, and after abortion the organisms appeared in the milk. The organism had recently been shown to be closely related to that causing Mediterranean fever, and it had been found in several human cases. It had also been suggested that it might cause abortion in women; personally, Mr. Male thought that the bacillus was not pathogenic for the human female.

Many different diseases of human origin were carried by milk, but he proposed only dealing with two—diphtheria and scarlet fever.

Diphtheria had in several cases been reported from milk in circumstances which (it had been suggested) implicated the cow as an actual carrier. The organism, however, was very common in healthy carriers, and Mr. Male thought that this fact had not been taken into consideration when those investigations had been made. In one outbreak investigated by him the cow had been suspected, and he found that she had been suffering from cow-pox, and that the organisms had come from a human carrier. Although it was possible that the organism could live in sores in cows' teats, there was no disease caused by the Klebs-Loeffler bacillus existing in cattle.

Scarlet fever was in a similar position. The disease was not uncommonly spread by milk, but proof was lacking that the organisms ever originated in the cow.

With the extra facilities given by the Milk and Dairies Acts and Orders, with the improvement in methods of sterilizing or pasteurizing milk which enabled the medical officer to stop or sterilize the supply at the first sign of disease, and with the rapid improvement in methods of handling and producing milk, Mr. Male believed that the menace to human health from that source would soon be considerably lessened and ultimately eliminated.

Professor WOOLDRIDGE recalled an instance of eight people drinking milk for several days from a cow which proved to be suffering from a streptococcal mastitis all the time. None showed any symptoms at all. Foot-and-mouth disease might, he thought, be conveyed by milk, especially in the early stages of the disease when the infection was present in the blood. Mr. PUGH said that a month ago he had drunk a glass of milk from a cow which a few hours later died from anthrax. He had antiserum administered and his stomach and rectum were irrigated with creosote solution within forty-eight hours. A week later he suffered from a rash due to the serum. He was only now recovering from the effects of an anaphylactic shock due to eating a beef sandwich.

Dr. H. H. SCOTT mentioned that several cases of undulant fever had been reported from districts in Italy where the caprine organism was absent.

Mr. DALLING pointed out that he had found the bacillus of diphtheria in sores on horses, and that it could live in similar sores on the udders and teats of cattle, and in this way enter the milk.

Dr. T. CAMERON stated that a peculiar set of outbreaks had recently been reported from France. Children had developed a series of symptoms of a gastro-intestinal nature, and in every case, within forty-eight hours, foot-and-mouth disease had occurred in the cow from which the milk had come. This had occurred so frequently and so regularly that there was little doubt that Professor Wooldridge's suggestion was correct—namely, that the milk was infective before the appearance of symptoms in the cow. Dr. Cameron suggested a possible explanation of the relative immunity of persons in this country to the disease. There were two strains of foot-and-mouth disease; (*a*) from Germany mainly (the region where most of the human outbreaks had occurred), and (*b*) from France. It had been shown that the latter was far more common in this country than the (*a*) strain, and he suggested that it might prove that only one strain—the (*a*) strain—was infective to man. There were, of course, a few human cases in Britain, but none had proved serious.

ORGANIZATION OF A FACTORY CLINIC.

AT a meeting of the Section of Epidemiology of the Royal Society of Medicine, on February 25th, a description of the ideal factory clinic was given by Dr. N. HOWARD MUMMERY. It was based upon a clinic actually in existence in the largest industrial establishment of its kind in this country.

The factory clinic, Dr. Mummery said, must be considered to be part of the "welfare" department, and its medical officer should be an expert adviser to the superintendent

of that department; he should not be an administrative or executive official. The premises for the clinic should be in the factory itself, preferably on the ground floor, and should include a waiting-room, first-aid surgery, and doctor's consulting-room equipped with the necessary appliances for a thorough examination. Other rooms which might conveniently be situated in the same block were a dental surgery, a rest and recovery room, and rooms for massage and manicure and pedicure. A house telephone system was essential, and in a large establishment a motor ambulance was very useful. The extent of the factory would determine the size of the clinic staff, and whether the medical officer and the dental officer should give whole-time or part-time service. A weekly visit from an ophthalmic surgeon enabled employees to be examined for errors of refraction, and another useful service was that of a trained masseuse with knowledge of the simpler forms of galvanic and high-frequency treatment, working under the factory doctor's supervision. A sufficient number of trained nurses should be employed to ensure that one at least was always on duty day and night during working hours. Dr. Mummery gave a long list of the uses of such a clinic: immediate treatment of minor injuries, and first-aid treatment in major accidents; diagnosis and treatment of minor illnesses and of medical emergencies; after-care and remedial treatment of operation cases and serious injuries with impaired function; recommendations as to change of occupation or light duty; medical examination of applicants for employment, including some vocational selection; examination of workers returning after illness or disablement; periodic re-examination of young or under-developed workers, and of those exposed to special occupational risks; domiciliary visiting of sick and injured employees; the establishment of co-operation with hospitals and private and insurance practitioners; general advice to the management and to individual workers on health questions and on the lighting and general sanitation of the premises, and, finally, the keeping of records concerning the health of the staff and the incidence of disease and accident. Great economy of time could be effected by treating at the factory all injuries not involving absence from work, and many of those causing temporary incapacity, as well as cases of skin disorders. He had found that the various skin eruptions common among industrial workers—seborrhoea, tinea, and the like—were slow in recovering under ordinary methods of treatment until a "skin corner" was started in the clinic surgery where patients could sit, under the nurse's observation, and for ten minutes at a time rub in simple preparations. The building and equipment of the clinic should be a capital charge on the firm, and maintenance costs and salaries of the clinic should be shown in the accounts of the whole "welfare" department of which it was a part. On the credit side must be entered the cash results of the saving of working time, lessened absenteeism, and other values not readily translatable into figures. Dr. Mummery gave some records from the clinic. One of these showed how the incidence of accidents corresponded with the speed of production; a speeding up of 10 per cent. resulted in an increase of accidents equivalent to from 50 to 100 per cent., an indication, of course, not of fatigue, but simply of increased and unaccustomed working activity; the accident rate varied inversely with the experience of the workers. He also quoted some statistics relating to the recent influenza epidemic. The staff at the factory numbered just upon 6,000, and of this number during January—the most severe period of the epidemic—329 employees were absent owing to this cause. Of these, 92 were away from one to six days, 171 from seven to fourteen days, and 66 for more than fourteen days, while 4 relapsed and had to take further leave. The attendances at the clinic during 1926 numbered 37,139, of which minor injuries accounted for 11,444, illness for 5,566, dental treatment for 3,376, massage treatment for 2,258, and medical examinations for prospective employment 2,689. He recalled Mr. Warren Low's recent presidential address to the Section of Surgery in which he had said, dealing with the subject of workmen's compensation, that another kind of hospital was needed, or, more properly, an after-care industrial centre, where, by constant personal supervision and encouragement, men who had suffered from injury or illness might be induced to overcome their diffidence with regard to their returning powers. That was exactly the work that he and others had for years past been trying to do in factory clinics.

VACCINE THERAPY.

AT a meeting of the Medico-Chirurgical Society of Edinburgh on February 2nd in the Scottish House of the British Medical Association, with Professor RUSSELL in the chair, a discussion on vaccine therapy was introduced by Dr. GLEN LISTON.

Dr. Liston said that, in spite of the fact that vaccines for the prevention and treatment of disease had been before the profession for more than a quarter of a century, there were still some who hesitated to use them. On the other hand, others treated all manner of ailments by vaccines. The cause of this divergence in practice was probably due to the absence of any systematic instruction in vaccine therapy. There was also generally a lack of co-operation between the clinician and the bacteriologist. The efficiency of vaccine therapy could be estimated in three ways, the first being examination of the immunological response produced by injecting a particular vaccine into a healthy man or animal. The second way was to inject the vaccine prophylactically into men and animals, and, in the case of men, after exposure to infection making a statistical inquiry comparing the progress of the disease among the inoculated and uninoculated respectively. In the case of animals resistance to infection was tested by injecting into them graduated doses of a virulent culture of the organism used in preparing the vaccine, and comparing the mortality among the vaccinated with the mortality among untreated animals injected with the same dose. Efficiency could also be estimated by employing a vaccine in the treatment of specific infections, and observing the rate of recovery in these cases when compared with untreated cases. Certain fundamental principles governed the practice of vaccine therapy. A vaccine must be made from a particular species of organism which had been ascertained to be the cause of the disease under consideration. It must be so prepared that when injected into an animal it would stimulate the tissues to produce substances and mechanisms antagonistic to the living microbe. The general principles of the dose of vaccine to be used for the prevention and the treatment of a disease must be thoroughly understood and mastered. In treating a disease by a vaccine the way in which micro-organisms protected themselves against destruction in the tissues, especially in an ecphylactic nidus, must be understood and suitably countered. It must be recognized that vaccine therapy had definite limitations, which could not be overcome by inventing new vaccines or special antigens. Vaccine therapy would always have its chief and most successful application in the treatment of disease, in the treatment of local infections, and in the earlier stages of acute infections. In the later stages of acute infections immuno-transfusion possibly afforded some prospect of success.

In the discussion which followed much emphasis was laid on the importance of care in the collection of specimens, and also on the value of co-operation between the clinician and the bacteriologist. Several speakers referred to the varying results in vaccine therapy. Prophylactic inoculation was generally considered the more satisfactory, but many disappointments were confessed in therapeutics.

Ague in Scotland in the Past.

Dr. JAMES RITCHIE (Royal Scottish Museum), in a communication on the former occurrence of ague in Scotland, said that while the distribution of ague in England had been investigated in detail, this was not so in Scotland. It could be shown that in early days, as late as the middle of the eighteenth century, ague was a common and widely spread disease, affecting most severely the agricultural section of the populace, and interfering with their activities. Examinations of old hospital records indicated that the disease was endemic. By the middle of the nineteenth century native ague was almost unknown. The diet which was available for man and beast in certain

districts of Scotland at that time was very restricted. Turnips and such foods were not grown, and so the winter food was very deficient. In the spring the farmers gathered at one farm and helped to move the cattle to the pasture. Some of the cattle might have to be lifted owing to their weak state. The conditions, therefore, for man were very poor, and infection by the mosquito was very likely. The mosquito found ideal conditions for hibernation in the heated farmhouses, and became active in the early months of the year. Thus it was found that ague occurred in the spring.

Dr. GLEN LISTON referred to another explanation of the peculiar seasonal prevalence of malaria in spring in this country. There were three types of anopheles—*maculipennis*, *bifurcatus*, and *plumbius*. *Anopheles maculipennis* passed the winter as an adult in places where animals lived, obtaining warmth and food by continually sucking blood. In the spring, therefore, they were ready to transmit malaria to the uninfected. Dr. ANGUS MACDONALD said that a temperature of 60° was necessary for plasmodial development and the passing of malaria to man. The temperature records showed that a period of high temperature was associated with an epidemic of malaria.

HISTORY OF MEDICINE IN EUROPE.

AT a meeting of the Devon and Exeter Medico-Chirurgical Society on February 17th, Dr. R. EAGER in the chair, Dr. WILLIAM GORDON read a paper entitled "The periods of European medicine: a study of the reaction of an intellectual industry to variations in its environment." In view of the general interest of the subject members of the Historical Society of Exeter were present by invitation.

Dr. Gordon defined three main periods—namely, (1) the rise, from the first recorded Greek medical discoveries about 600 B.C. to the death of Galen in 202 A.D.; (2) the pause, from the death of Galen to the beginning of the sixteenth century; and (3) the reascent, from the beginning of the sixteenth century to the present day. In each of these periods he distinguished three subperiods. The rise included a pan-Hellenic subperiod from about 600 B.C. to the establishment of the first recorded school of human anatomy at Alexandria about 300 B.C.; an Alexandrian subperiod from that date to the establishment of Greek medicine at Rome by Asclepiades about 91 B.C.; and a Roman subperiod from then to the death of Galen. The pause began with an interval of chaos following the murder of Commodus, and might be held to last, as far as medicine was concerned, for about a century and a half, until the writings of Oribasius, the first Byzantine writer. This was treated not as a subperiod but as a "gap." The first subperiod of the pause was the Byzantine and Persian subperiod, the Byzantine portion beginning with the foundation of Constantinople and closing in the eighth century, when its important writings ceased, while the Persian portion dated from the establishment by the exiled Nestorians in the fifth century of the school of Jondisabur, which in the eighth century became the starting point of Arabic medicine. The second subperiod of the pause was the "Arabic," beginning with the translators of the eighth century and maintaining its vigour until the middle of the thirteenth century, thus somewhat overlapping its successor. The third subperiod of the pause was "The age of pointed architecture," the only title which sufficiently defined the thirteenth, fourteenth, and fifteenth centuries, of which it was composed. The reascent period contained a north Italian subperiod lasting about a century, the workers living round Padua; a "trans-European" subperiod of about two and a half centuries, so named from the workers extending over an area comprising Italy, Switzerland, France, the Rhineland countries, and the British Isles; and a pancosmic subperiod from 1840 to the present day, in which the title was justified by the distribution of the workers. The points to which attention was chiefly directed were: the liberty of thought, to which medicine seemed to be even more sensitive than art and letters; the lateness of medicine to mature in each succeeding civilization as compared with art and letters; the curious movement polewards of the main seats of medical activity during the march of time—a movement shared by other evidences of human energy; and the influence of nationality.

Professor HART expressed the appreciation of the Historical Society, and noted with interest that many persons whose names were found in the science of medicine had also won honour in other fields, as for example, Aristotle and Rabelais. He had observed through the lecture that, whereas medical lore had been ripe along the Nile, sterility had seemed to have been the case along the Euphrates.

Dr. JONAS remarked that submission to authority had often proved a deterrent in medicine, and he gave as an example the era controlled by Galen. Conversely, progress in Great Britain had resulted from freedom of thought. Dr. Jonas added that at the time of Susrata India was far in advance of Greece, and in allusion to the skill of Susrata quoted his aphorism, "The best instrument is the hand of the surgeon."

Dr. GORDON, in his reply, said that the medical profession had indulgence and liberty in Egypt, and the science of medicine was treated with dignity and honour. On the other hand, in Babylonia medicine flourished empirically, and punishment followed failure in treatment on the lines of the code "an eye for an eye." Herodotus had stated that there were no physicians in Babylon, and that the sick were exhibited in the street with the hope that those passing by might be able to offer suggestions in diagnosis and treatment. With regard to the small part played by India in the diffusion of knowledge, Dr. Gordon said that the position held by India in the pioneer period of medicine must be acknowledged, but unfortunately that position had been isolated, and had been of negative value to the world at that time owing to lack of communications.

Mr. RUSSELL COOMBE, alluding to the discoveries in Mesopotamia, said that further investigation would show some day that medicine there had not fallen short of the high grade of civilization in that country in ancient times.

JAMES MACKENZIE INSTITUTE.

ON February 15th, at the James Mackenzie Institute for Clinical Research, St. Andrews, Dr. MCKERROW read a paper on skin hyperalgesia in abdominal disease. He pointed out that this symptom was almost entirely ignored in surgical textbooks, although Mackenzie, Head, Sherren, Hurst, Cope, Ligat, and others had demonstrated its importance. Mackenzie was among the first to realize the value of this viscero-sensory reflex in localizing abdominal disease, and to point out that if the reflex path was traced back to its origin it would lead us inevitably to the organ at fault, since the hyperalgesic skin received its nerve supply from the same segment of the cord as the diseased viscus causing it. Ligat's work was fully reviewed, and the lecturer quoted several cases supporting Ligat's findings. It was obvious, he said, that the circumscribed areas figured by Ligat would be enlarged in cases complicated by extension of inflammation to the subperitoneal tissue, which was richly endowed with cerebro-spinal nerves; this probably explained, in part at least, the difference in shape and size of hyperalgesic areas figured by Cope and Ligat. As regards the adequate stimulus required to induce pain and hyperalgesia, Mackenzie held that since mechanical stimuli such as heat, cutting, etc., produced no sensation when applied to viscera supplied from the sympathetic system, the adequate stimulus must be provided by a vital activity, and he considered that abnormal contraction of non-striped muscle was the source of this stimulus. Other authors suggested increased tension or imperfect drainage of the tissues as the cause, but the lecturer pointed out that tension and obstruction were just the conditions that led to overactivity of the muscular coat. Ligat's view that the mucosa contained the receptors for the viscero-sensory reflex was capable of a similar explanation, since stimulation of the mucosa resulted in peristaltic activity. He drew attention to the cases quoted by Ligat, which showed that the area of hyperalgesia was constant no matter what displacement of the related viscus was present. He concluded that Ligat's contention that "in a typical case the hyperalgesic area found accurately indicates the organ at fault" was true and of great diagnostic value.

Reviews.

PSYCHOLOGY AND ETHNOLOGY.

IT was the wish of the late Dr. RIVERS that certain of his memoirs on ethnological subjects which were scattered in volumes not readily accessible to students should be collected into a book. In fulfilment of a promise that this should be done, Professor ELLIOT SMITH has chosen a number of essays, including some hitherto unpublished, and has issued them together under the title of *Psychology and Ethnology*.[1] The result is a volume every page of which is of great interest, and although the subject-matter of the selected articles is very diverse, one fundamental idea, which was ever present with Dr. Rivers, is evident throughout—namely, that the essential aim of ethnology should be to ascertain the psychological motives which impelled men to develop customs in different ways. The book is prefaced with a useful introductory chapter in which Professor Elliot Smith describes the gradual development of Dr. Rivers's ideas in ethnology, their relation to current theories, and his contribution to the advance of the science.

An early conviction of Rivers that psychology and ethnology were better studied apart was due apparently to the comparative lack of concrete data afforded by the former science. It was probably the influence of this conviction which led him to accept, in the first instance, the doctrine of Tylor and Bastian that, when the conditions are similar, similar customs and institutions come into existence and develop on the same lines among peoples that may be widely separated both geographically and ethnologically. That this crude evolutionary doctrine was insufficient became obvious to Rivers during the preparation of his work on Melanesian society, in 1914, and his attention was thus drawn to the study of ethnological method. In this study he was struck by the fact that whereas in other sciences research, in whatever country it might be conducted, had identical principles and methods, in anthropology the divergence of method in different countries was so great that any common scheme was impossible. For instance, many transitional forms of design used in the artistic work of different races, which British anthropologists would have described as representing stages in an evolutionary process, were, by the modern German school, ascribed to a mixture of cultures and of peoples. Hence Rivers arrived at the belief that evolutionary speculations were valueless apart from a preliminary analysis of the cultures now spread over the earth's surface, such as would ensure the detection of elements of the more advanced cultures in the institutions of apparently primitive peoples. This change of view involved the admission of the reality of cultural diffusion, although Rivers's attention became focused rather upon the effects of the admixture of cultures. It was also evident that in tracing the source of cultural elements a knowledge of the different motives actuating different peoples would be of great value, and that the study of the psychology of motives was an essential part of ethnology. Thus the barrier between Rivers's psychological and ethnological studies was broken down and the two became intimately blended. As regards psycho-analysis, Rivers gave a qualified assent to its main principles, while dissenting from the Freudian speculations in ethnology.

The ultimate influence of Rivers's work will, in the opinion of Professor Elliot Smith, be to bring back anthropology into conformity with the sound principles enunciated by Sir Edward Tylor, by relighting the lamp of history. "To ingenious attempts at explaining by the light of reason things that want the light of history to show their meaning, much of the learned nonsense of the world has indeed been due."

[1] *Psychology and Ethnology.* By W. H. R. Rivers, M.A., M.D., D.Sc., LL.D., F.R.C.P., F.R.S. Edited with a preface and introduction by G. Elliot Smith, M.D., F.R.S. London: Kegan Paul, Trench, Trubner and Co., Ltd. 1926. (Demy 8vo, pp. xxviii + 324. 15s. net.)

AEROPHAGY.

DR. G. LEVEN'S book on *L'Aérophagie*,[2] first published about seven years ago, and then noticed in this JOURNAL (1920, ii, 794), is a clinical, radiological, and therapeutical study of air swallowing, a common condition which is of some importance because troublesome and even serious. It has now been revised and expanded in a well deserved second edition. If, when air is swallowed, the cardiac end of the oesophagus remains closed it is noisily returned; in contrast to this "incomplete" aerophagy is the silent form in which the swallowed air passes into the stomach, and from there, sometimes after more or less delay, reaches the intestines, where it produces various clinical manifestations. The chemical composition of the gas brought up by the mouth is that of air, for gastric fermentation is incapable of rapidly generating the enormous quantities of gas that are sometimes eructated. Examination by *x* rays clearly demonstrates the passage of air into the oesophagus with gradual distension of the stomach and elevation of the left leaflet of the diaphragm; often when the patient thinks that he is eructating he is really gulping down more air. In the aerophagics the stomach may be large or small, and from distension of the colon an appearance of an hour-glass stomach may result. The cause of aerophagy may be gastric, some irritation reflexly exciting salivation and so swallowing; or extragastric, dental and naso-pharyngitic irritation (which increases the salivary flow), and nasal obstruction. Acute dilatation of the stomach after operation and in childbirth is due to excessive salivation set up by chloroform and deglutition movements made by parturient women during labour. The secondary effects of aerophagy, such as dyspnoea, cardiac pain and palpitation, and colic, are minutely detailed, and the various treatments of the swallowing tic are discussed. Dr. Leven's book is a valuable guide about a familiar condition, which, however, is not generally understood; it should be widely read.

THE CHILD AT SCHOOL AND IN ADOLESCENCE.

"Is Saul also among the prophets?" School doctors and members of school committees are apt to look upon members of central Government boards of health as too often brakes upon the wheels of progress. But in a little book entitled *The Child at School*,[3] by Sir LESLIE MACKENZIE, a member of the Scottish Board of Health, there is a fine example of the fact that primary interest need not be destroyed by an official position. The book is one of the series of Modern Health Books, several of which we have had occasion to commend, and is instinct with life and insight into the problems of childhood. The school, as a special organ of the family, has, says the author, a triple function: to instil knowledge, to cultivate intelligence, and to develop character. The first it does by suiting the lesson to the mental age of the child; the second by equipping the child with the methods of acquisition; the third by placing the child in a community of its contemporaries. Success hangs on the capacity of the teacher to select the right knowledge, to assess individual differences in faculty, and to create the right atmosphere for the blossoming of personality. The problem would be simpler if every child went to school from a good social environment, having a good inheritance and a good record of personal health. To see that the best is done that can be done is the purpose of the medical administration. All this has to be accomplished in nine short years, with mixed material, and much of it too often damaged in pre-school days. There is one general inference—namely, that until the adverse influences of the pre-school period are adequately counteracted, the schools will continue to be loaded with much preventable disease and defect. One of the most interesting of the chapters is that which discusses the question "When to go to school?" The author endorses the conclusion of Mr. Winch that "no advantage appears to exist in early entry so far as subsequent attain-

[2] *L'Aérophagie: syndromes gastriques, intestinaux, circulatoires et respiratoires.* Par le Dr. G. Leven. 2e édition, revue et augmentée. Paris: Gaston Doin et Cie. 1926. (Cr. 8vo, pp. x + 256; 28 figures. 19.60 fr.)

[3] *The Child at School.* By Sir Leslie Mackenzie, M.D., etc. The Modern Health Books. London: Faber and Gwyer, Ltd. (The Scientific Press). 1926. (Fcap. 8vo, pp. 232. 2s. 6d. net.)

ment of good behaviour and the development of attentiveness are concerned," but he adds that in present conditions "The age of 3 is not too early to begin school, if the school provided is of the right order. Such a school, equipped in the ways now understood in all good nursery schools, kindergartens, and allied schools, offers to the child an environment more adequate for the organization of his impulses towards life in a community than the casual life of the streets or the unsuperintended life of the back-courts." The discussion on the effects of dietary is excellent. Sir Leslie Mackenzie says:

"The food factor tends to supersede every adverse influence. Bad air, over-work, interrupted sleep, diminished sleep, and all other environmental influences have a less destructive effect on the well-fed child. When sleeping time comes nothing will keep him awake. He has more vigour to combat the effects of bad air. He has more energy to neutralize over-work. With his growing energy he becomes more competent to alter his environment and adapt it to himself. He becomes more discontented with every adverse condition. He is more difficult to restrain; but he is readier to learn. A head master of a very poor school has stated that, after three weeks of soup kitchen food, where no scientific attention was given to diet, he always found his children more lively, more mischievous, more fit to react to school."

This little book is essentially one to read and think over; it will be a stimulus to enthusiasm and a holiday to the school worker who has stuck in the rut of routine.

WINIFRED RICHMOND, an American psychologist, in her book on *The Adolescent Girl*[4] traces the treatment of the girl in savage and ancient times, and the strange ceremonies that have initiated her into womanhood. The stories seem impossible to us. Yet it is astonishing what a vast body of ignorance and superstition still adheres to such a natural function as menstruation. There were so many prohibitions of necessary daily work that the reader begins to wonder if the whole system were not really a subtle form of protection for the woman, to secure her a rest where otherwise she might get none! But mothers to-day give their daughters strange directions. The first thing, the writer states, is to induce belief in the naturalness of the period, and then to recognize the great variation among girls in regard to the function. All girls, she thinks, should bathe during their periods, at least as frequently as usual, and a local bath with a change of napkins morning and evening, and once at least during the day if possible, is no more than ordinary cleanliness. Some girls continue their cold tub, even sea-bathing, with no noticeable effects, others are more comfortable after a warm sponge bath. Each girl must find out what is best suited to her. Puberty is not only marked with the beginning of this function; there is evidence of accelerated growth and of increased vitality and power to resist disease. In successive chapters the author develops her picture of varied types, including the abnormal girl and the delinquent girl. Then follows a chapter on the normal girl which is admirably written and full of common sense. Training and education are discussed, and the need for selection according to ability is insisted on. Dr. Winifred Richmond is to be congratulated on her book. We have read few which show better balance, better observation, and a finer judgement of her youthful sisters.

There is a school of research at Harvard University to which subventions from the Commonwealth Fund of the Harvard Graduate School of Education have been made for the investigation of the mental and physical development of school children by means of repeated measurement of the same children over a period of years. Dr. MARY WENTWORTH has collected the results of her own work in the examination of 1,000 children, and published them under the title *Individual Differences in the Intelligence of School Children*.[5] She did not observe any sex differences which she considered important. The medians for girls both in the group and in the individual distributions were about one point higher than for boys, but boys showed a greater range. There were a few more boys than girls among the very superior children, and more boys than girls maintaining high scores in successive tests. A definite relationship was found between mental and anatomical development; retardation in anatomical development accompanied mental retardation, and acceleration in anatomical development accompanied mental superiority in about two-thirds of the cases. This relationship is significant, and indicates the necessity of complete examination before any decision is given. Of twins it was found no two were exactly alike, but some were so similar that a monozygotic origin was assumed; in other cases much doubt was felt in classification. "The marvellous fact of the uniqueness of each human personality is illustrated by the twins in our study, where the resemblance never amounts to exact identity, but is always specialized." In general it was found that superior intelligence did not always bring with it superior emotional or moral attitudes, nor that inferior intelligence necessarily resulted in emotional maladjustment. Any marked deviation from the average was unconsciously sensed, even by young children, and compensatory reactions of all kinds were the result. The book will be of interest to educationists who are just now much absorbed in these psychological tests and in the determination of their ultimate values.

[4] *The Adolescent Girl: A Book for Parents and Teachers.* By Winifred Richmond, Ph.D., Psychologist to the Government Hospital for the Insane, and Lecturer to the University, Washington, D.C. New York: The Macmillan Company; London: Macmillan and Co., Ltd. 1925. (Cr. 8vo, pp. xiv + 212. 5s. net.)

[5] *Individual Differences in the Intelligence of School Children.* By Mary M. Wentworth, A.M., Ed.D. Cambridge: Harvard University Press; London: Milford, Oxford University Press. 1926. (Med. 8vo, pp. 162; 16 tables. 8s. 6d. net.)

HUTCHISON'S DIETETICS.

Food and the Principles of Dietetics,[6] by Dr. ROBERT HUTCHISON, the sixth edition of which has just appeared, is such a well established and well known textbook that there is little need to point out to our readers its chief merits. This is more especially the case because no extensive alterations have been made in the form of the book since the last edition, which appeared in 1922. The author mentions, however, that the sections dealing with the protein optimum, the vitamins, and the principles of infant feeding have been altered in accordance with the advances in knowledge in these subjects. We were, however, rather surprised to note the statement on page 118 that "Pasteurization, properly carried out, does not interfere with the flavour, digestibility, or vitamin content of the milk." The author doubtless has sound reasons for this statement, but many good authorities are emphatic that the process destroys a large proportion of the antiscorbutic vitamin content of the milk, and since this point is of great practical importance it would have been more satisfactory if the author had given reasons for his conclusion.

Everyone is aware that the preparation of successive editions of a large textbook is a particularly laborious task, and there is a limit to the amount of work that can reasonably be demanded of an author. We cannot help feeling, however, that this book would have been improved by the weeding out of certain phrases that read rather strangely in 1927; for example, in a footnote on page 367 the author says: "Since the above was written an epidemic of arsenical poisoning has occurred from the consumption of 'substitute' beer prepared from impure glucose." This appears to refer to the Manchester epidemic of 1900. Similarly in other places the word "recently" is used of events that occurred rather a long time ago. The retention also of the pre-war prices for foods in certain sections lends an air of unreality to the discussions on the economy of food.

The points we have mentioned are all of minor importance, but there is a danger of phrases such as we have quoted attracting the attention of the reader, and producing a wholly wrong impression of the general quality of this excellent and most useful book.

THE LAW RELATING TO DENTISTS.

THE first Dentists Act (1878) prevented unregistered persons from recovering fees for dental work, and stopped the improper use of dental titles, but did not prohibit such persons from practising dentistry. The Dentists Act of 1921 prohibited the practice of dentistry by unregistered persons,

[6] *Food and the Principles of Dietetics.* By Robert Hutchison, M.D.Edin., F.R.C.P. Sixth edition. London: E. Arnold. 1927. (Demy 8vo, pp. xvii + 610; 33 figures, 3 plates. 21s. net.)

whether for payment or not. The provisions of both Acts, and a further Act passed in 1923, and the regulations of the Dental Board, are set out in full in *The Law and Practice Relating to Dentists and Dentistry*,[1] by Mr. ALBERT CREW, barrister, together with explanatory notes and case references. The Dentists Act of 1921 gives dentists struck off the *Dentists Register* a right of appeal to the High Court. Mr. Crew believes that this right of appeal has been given to the dentist because unless registered he cannot practise at all, whereas the Medical Act of 1858 does not prohibit the practice of medicine and surgery, but provides *inter alia* that none but registered practitioners may recover any charges in any court of law for advice or treatment. The book contains chapters on professional ethics, conduct, and negligence.

NOTES ON BOOKS.

WE have read with appreciation *A Student's Manual of Organic Chemical Analysis*,[2] produced under the joint authorship of J. F. THORPE and M. A. WHITELEY. Many of the analytical operations of organic chemistry will fail of satisfactory accomplishment unless they are performed according to certain empirical rules, which may, indeed, be harmonized with scientific facts. Accordingly there exists for almost every analytical purpose a variety of schemes, each having peculiar merits and defects, arising out of the decisiveness of the reaction employed, the accuracy of the indication, or the convenience of the appliances. Without a knowledge of these the novice must suffer much discouragement from failure to accomplish the practical demonstrations expected from theoretical teaching. This book is, therefore, particularly welcome as the work of experienced teachers, and as one emanating from a laboratory where the methods of organic analysis have been cultivated to a high standard of efficiency. There is, as the authors state in their preface, no science which approaches organic chemistry as a vehicle for facts, and there is, in consequence, no science worse than organic chemistry as a means of mental training if it is wrongly taught. This is strictly true. It means that while the student is learning organic chemistry he must learn also the conditions, determinable by choice of method and manipulation, which favour the peculiar molecular transformation desired. Such methods ultimately become the chief of the organic chemist's sources of inspiration when engaged upon original work. For these reasons, and because the book offers the student a most advantageous opportunity of progress on the lines indicated, we recommend it unreservedly to the student and worker engaged in this branch of chemistry.

The medical administrator faced with an emergency in the form of an outbreak of infectious disease will find Dr. S. H. DAUKES's *Barrier Charts for Health Officers*[3] a compendious and reliable guide. The charts divide the infectious diseases into four groups: (1) the alimentary group, transmitted by the alimentary tract; (2) the inoculation group, carried by insects, etc.; (3) the respiratory group, including pneumonia and measles; and (4) the contact group, comprising syphilis, anthrax, and some other diseases. On each chart the measures for control are set forth under four heads, called barriers, which deal with (1) the sick person, contacts, and carriers, (2) zoological precautions, (3) general hygiene, and (4) specific immunization. The general arrangement of the charts is sound. Bubonic plague, for example, appears under the inoculation group, while pneumonic plague, administratively a different disease, is classed under the respiratory group. Japanese river fever, tularaemia, and other foreign diseases are noted, as well as those common in this country. These charts will not greatly inform the ignorant, but to those who possess the requisite groundwork of knowledge they will serve as a useful stand-by, recalling to the mind appropriate remedies and suggesting the right thing to do.

The recreations of a physiologist are various. Only a short time ago we mentioned that Dr. LEONARD HILL, F.R.S., Director of the Department of Applied Physiology in the National Laboratory for Medical Research, Hampstead, had been holding a one-man show of his pictures and sketches. Now we have received a copy of a set of fairy tales published under the title *The Scarecrow*.[10] It appears that Dr. Hill wrote them for his children, and that he has made his own black-and-white illustrations; some of these, especially those which have anything to do with movement, are excellent in their rather blotchy way. Of a few we must admit that we can make neither head nor tail, though we like the heads and tails of some of the beasts. One story of an elfin which got shut up in the coal measures has a charming picture of a hairy elephant. The book has been issued as a birthday present by a number of his friends and pupils, including everyone now living who has served under him as demonstrator or research assistant. It is offered to him as a token of their affection and respect, and there are, therefore, compensations in reaching the age of 60.

A list of questions on nursing, with model answers, has been compiled by Dr. J. A. FOOTE, and published under the title of *State Board Questions and Answers for Nurses*,[11] the questions being those set at examinations in thirty-one of the United States of America. The subjects include materia medica and therapeutics; anatomy; physiology; hygiene and bacteriology; general, surgical, gynaecological, and obstetrical nursing; feeding and diseases of children; dietetics; chemistry; physics; nursing ethics; and psychiatric and neurological nursing.

[1] *The Law and Practice Relating to Dentists and Dentistry.* By Albert Crew, Barrister-at-Law. London: John Bale, Sons and Danielsson, Ltd. 1926. (Cr. 8vo, pp. xiii + 228. 10s. 6d. net.)

[2] *A Student's Manual of Organic Chemical Analysis.* By Jocelyn Field Thorpe, C.B.E., D.Sc., Ph.D., F.R.S., F.I.C., and Martha Annie Whiteley, O.B.E., D.Sc., A.R.C.S., F.I.C. London and New York: Longmans, Green and Co., Ltd. 1926. (Roy. 8vo, pp. x + 250; 55 figures. 9s. net.)

[3] *Barrier Charts for Health Officers.* By S. H. Daukes, O.B.E., M.B., D.P.H., D.T.M. and H. Second edition. London: Baillière, Tindall and Cox. 1927. (Wallet containing four charts. 2s. 6d. net.)

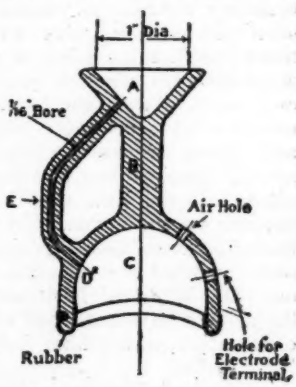
[10] London: The Actinic Press, Ltd. Price 3s. 6d. There is also a special presentation edition signed by the author, price 10s. 6d.

[11] *State Board Questions and Answers for Nurses.* Compiled and edited by John A. Foote, M.D. Lippincott's Nursing Manuals. Fourth edition. London: J. B. Lippincott Company. 1926. (5¼ × 8¼, pp. xii + 484. 15s. net.)

PREPARATIONS AND APPLIANCES.

A Diathermic Applicator for the Eye.

MR. PHILIP FIGDOR (Physician in charge of the Electro-therapeutic Department, St. John's Hospital, Lewisham) has designed an applicator to simplify the use of the diathermy current in eye diseases. The diathermy current, he writes, has hitherto been applied to the eye by an ordinary glass eye-bath, pierced by a metal terminal. The cup was filled with saline and applied to the eye with the patient in a forward stooping position. With a great deal of manœuvring on the part of the patient and the assistance of the operator, the patient gradually assumed a recumbent position with the eyeball pressed closely to the socket to prevent the escape of the saline solution. A source of discomfort was the pain of pressure of the glass rim. Leakage was both a source of worry and danger, and to refill the applicator the whole procedure of getting the patient to sit up and again to balance the applicator into position had to be repeated. The figure is a cross-section; B is a bar of solid glass connecting A a hollow funnel (A) with C, which is a hollow, elliptical eye-bath. Also connecting A and C is a glass arm (E) with a 1/16-inch bore. The cup C has a detachable rubber cap, and is pierced in two places—one an air-hole and the other for the metal electrode terminal.



The applicator is used in the following way. The patient lies on a table with one pillow and the applicator is placed in position on the eye to be treated, with the rubber fitting as closely and evenly as possible into the eye socket, with the electrode terminal already connected up with one pole of the diathermy machine (the other pole is connected with a handle electrode which the patient grasps in one hand). Saline is poured into the funnel A and falls evenly into C and covers the patient's eye. When the air-hole is reached the current can be turned on.

Iredell and Meadows Ryley, so far as my search of the literature extends, were the first to apply the diathermy current in eye diseases, and they published their results in a number of cases, which seem to have done remarkably well, in the *Proceedings* of the Royal Society of Medicine, 1919. Since then diathermy in eye diseases seems to have been in abeyance, probably owing to the difficulty of applying it. Although still requiring extreme care and caution on the part of the operator, the new applicator is safer and easier to manipulate. It has been made for me by Watson and Sons (Electro-Medical), Ltd., Sunic House, Kingsway, W.C.2.

Insulin.

With the approval of the Medical Research Council, Burroughs Wellcome and Co. are now prepared to supply insulin 200 units in 5 c.cm. in addition to the regular strength of 100 units in 5 c.cm. This increased concentration will, it is thought, be found convenient by medical men who have patients requiring a high unit dosage. The stronger preparation is carefully labelled and distributed in a carton of distinctive colour.

MEDICAL RESEARCH COUNCIL.

ANNUAL REPORT.

(*Concluded from page 388.*)

Tuberculosis.

THE Tuberculin Subcommittee has carried out further studies confirming the value of the double intradermal test for the detection of tuberculosis in dairy cattle, and its great superiority to the subcutaneous test. This test is now being increasingly used by veterinary surgeons throughout the country. The subcommittee considers that the ophthalmic test should now be used only as a confirmatory test; it has reason to believe that with certain brands of tuberculin a non-specific ophthalmic reaction may be obtained after repeated tests, a fact which affords an additional reason for not diagnosing tuberculosis on the result of the ophthalmic reaction alone. Various investigations on the value of sanocrysin in the treatment of tuberculosis in animals are recorded. Professor S. L. Cummins, working with rabbits, showed that milder infections could be practically eliminated by the use of this drug, but that dosage and virulence of the strain were factors of great importance; sanocrysin was without avail where the dose was big or the strain relatively virulent. Captain Douglas's results indicate that sanocrysin has no specific action on the tubercle bacillus, but that it affects the cells so as to give indirect damage to the infecting organisms.

Tissue Growth.

Mrs. B. E. Holmes and Miss Watchorn, working in Sir Frederick Hopkins's laboratory, have studied the production of ammonia and urea by tissues in culture, and have determined the amount of the chemical changes due to actual growth. Surviving kidney tissue of the rat embryo produces neither urea nor ammonia; growing kidney tissue produces ammonia certainly and probably urea also. Surviving brain tissue of the rat embryo produces no urea, but converts a large amount of the existing urea into ammonia; this does not occur to the same extent in growing tissue. Rat carcinoma and sarcoma tissue contain abnormally small amounts of glutathione, and they are also deficient in the respiratory pigment cytochrome. These findings are all in agreement with Warburg's contention that cancerous tissue as compared with normal tissue lives under anaerobic conditions rather than aerobic; moreover, cancerous tissues can only reduce very small amounts of glutathione. These observations are being extended, and it is hoped to investigate the glutathione content and the reducing power of aged tissue and of tissues in the precancerous state.

Filterable Viruses.

The Council draws renewed attention to the importance of investigations on the filterable viruses. Research into the nature of the infection in measles, encephalitis, poliomyelitis, vaccinia, variola, and herpes is being prosecuted all over the world, and nowhere with greater vigour than at the National Institute for Medical Research at Hampstead; inability to grow the viruses outside the body by any means yet discovered hampers the work in many directions, and prevents any marked progress so far; but, as is observed, information is being gradually accumulated, and any ingenuity that gives a new experimental method of approach at one point may well mean an advance all along the line.

Rous Chicken Sarcoma.

Dr. Gye and Mr. Barnard have continued their study of the filterable virus obtained from the Rous chicken sarcoma. Mr. Barnard's work has been interrupted by transference from Hampstead to the new installation at Mill Hill, where improved facilities have been provided and work is now being pushed steadily forward. A short restatement of Dr. Gye's position is given; the two chief lines of criticism that have been made on his work have been considered. Dr. Gye has so far found no reason to modify his position.

Lethargic Encephalitis.

Dr. Perdrau has made considerable progress with his work on encephalitis lethargica, and into the related problems of the virus of herpes and the immunity reactions to it. Dr. Da Fano has collaborated with him in the micropathological investigation, and these workers now find it possible to state definitely that the virus of herpes can cause in rabbits a chronic form of meningo-encephalitis with characteristic microscopical features.

Vaccinia.

Reference has already been made to the difficulty in growing the viruses outside the body, and it is encouraging to note that Captain Douglas records that good progress has been made in this respect with vaccinia virus, using a strain supplied by the courtesy of M. Levaditi from the Pasteur Institute, Paris.

Distemper.

Dr. P. P. Laidlaw and Mr. G. W. Dunkin have carried their attack on distemper in dogs to a further stage. They have already amply confirmed Carré's view that this disease is in fact due to a filterable virus, and that it is not due to bacteria visible by ordinary methods; they have shown also that the disease is transmissible to ferrets and then back again to dogs at will. They have now attempted to produce immunity against the virus by inoculation with a formalin-treated virus. In ferrets, for which the disease is almost invariably fatal, a substantial success has been obtained, and treated animals have, as rule, been able to withstand successfully massive doses of the virus which would otherwise certainly have proved fatal. With dogs the treatment has so far proved much less satisfactory; but there is clear evidence that the disease in them is modified, and experiments are in hand to show whether the desired end cannot be obtained by inducing a mild infection in an animal partially protected by previous treatment with a weakened virus. This work is carried out in collaboration with the Distemper Research Council, which is financially supported by voluntary contributions collected by the *Field* newspaper.

General Biochemical Researches.

Bacterial Chemistry.

Miss Stephenson and Dr. Quastel are investigating the requirements of strictly anaerobic bacteria. Working with *B. sporogenes*, they find that three constituents of a tryptic digest of casein are necessary for normal growth and reproduction of the organism. One of these is a compound like cystein, thioglycollic acid, or reduced glutathione, and the suggestion is made that the function of this substance is to maintain the medium at a limited reduction potential above which the organism is unable to grow. These studies have led to a re-examination of the current view that the toxic action of oxygen on anaerobes is due to the production of hydrogen peroxide.

The extension of the work of Dr. Gordon and Miss R. Wheatley at Leeds on the effects of amino-acids on bacterial growth has led to results which appear to have practical value. By growing a variety of pathogenic bacteria on samples of peptone broth media to which various amino-acids have been added, Dr. Gordon finds that these acids may be divided into three groups: those which favour growth, those which hinder it, and those which are indifferent. Miss Wheatley, working with the gonococcus in broth reinforced with traces of heated blood, obtained corroborating results, and acting on these observations Dr. Gordon tried growing the gonococcus on medium to which small quantities of taurine had been added; as a result he found a great increase in the size and number of the colonies obtained and in the length of their survival.

Colloids.

Dr. C. G. L. Wolf and Dr. E. K. Rideal, in their studies on the chemical and physical nature of the reactions involved in the Wassermann test, find that the active agent in a specific serum is contained in the euglobulin fraction and is not essentially bound up with the lipoids attached to the

euglobulin. In the precipitation test there is a sensitization of the antigen by a fraction of the proteins of the serum, and the precipitation is caused by the salts of the test fluid acting on the sensitized antigen.

Mr. A. Wormall and his collaborators suggest that "complement" contains a second relatively heat-stable constituent; complement is inactivated by alkaline ammonia salts, and it is shown that the ammonia inactivates a heat-stable constituent present in the end-piece fraction. They also adduce evidence that non-dialysable calcium plays some part in the complement reaction.

Anaesthetics.

The anaesthetic committee has continued the investigations into the impurities in nitrous oxide, and still finds that the most common is an undue percentage of nitrogen. It is hoped to publish a schedule of simple tests for general adoption this year. There has been difficulty in obtaining propylene sufficiently pure; apparently there is some irritating by-product present as yet unidentified. The objectionable odour of ethylene is now believed to be that of ethylene itself and not due to the presence of an impurity as had been suspected. Professor Dixon has been working for the committee on the ignition points of various anaesthetic agents in air and oxygen; he showed that mixtures of ether vapour and oxygen ignite readily at a temperature much lower than the visible red heat of any metals. This fact was at once published, as ignorance of it had been responsible for at least one fatality.

General Physiology, Bacteriology, and Protistology.

Physiology of the Heart.

Dr. G. Anrep has worked on the regulation of the blood circulation and the blood supply to the cardiac muscle under normal and pathological conditions. A new method devised by Dr. H. N. Segall made it possible to separate the thoracic from the cerebral circulation and so to study them independently under controlled conditions. He has been able to show the presence of a rich supply of both vaso-constrictor and vaso-dilator fibres to the heart blood vessels, the tone of the vasomotor nerves being regulated both centrally and reflexly. The coronary circulation was shown to be dependent upon the blood pressure in the brain and upon the composition of the blood circulating in the brain.

Studies in Immunity.

Dr. L. Colebrook, in his work on the pathology and treatment of puerperal infection, has made further experiments bearing on the treatment of generalized infections with haemolytic streptococci. These have thrown new light on the chemotherapy of these infections by arsenical compounds; it has been found possible to extend considerably the period during which the blood can be endowed with an enhanced power to kill streptococci. This has been done by using arsenical compounds of such low toxicity for human white corpuscles and other vital tissues that they can be injected at frequent intervals.

Intestinal Protozoa.

Mr. Dobell and Dr. Laidlaw, using their improved methods of cultivating the intestinal amoebae of man and monkeys, have succeeded in obtaining encystation and excystation of the amoebae outside the body, and have been able to obtain all the stages of the life-history of *Entamoeba histolytica* and several other entozoic amoebae. They have found that the bacteria present in cultures of these amoebae have an important bearing on their growth and development. Prolonged cultivation in starch-containing media may alter the characteristic infective power of *E. histolytica*. The same workers have also investigated the action of emetine and other drugs upon cultures of *E. histolytica* and other entozoic amoebae; as compared with other ipecacuanha alkaloids, emetine and cephaeline are specifically poisonous to *E. histolytica*. Very small quantities of emetine, if continuously maintained in culture of *E. histolytica*, inhibit its development and ultimately lead to its death; on the other hand, comparatively strong concentrations are needed to produce immediate death. Particular attention is drawn to this time factor in the slow poisoning by small amounts of alkaloid, as it suggests a principle of wide chemotherapeutic application.

Mr. Dobell is making a detailed comparative study of the life-histories of different species of amoebae of man and monkeys as they occur in their hosts and in culture; his work in this direction already makes it appear highly probable that the species of endolimax occurring in macacques is identical with that commonly found in man.

Experimental Epidemiology.

Professor W. W. C. Topley and Dr. Greenwood have published further studies in experimental epidemiology; they have attempted to evaluate the relative importance of selection and active immunization as factors in bringing about the increased average resistance shown by mice which have passed through a period of epidemic prevalence. It is concluded that pure selection alone cannot account for the results obtained, and that active immunity plays some part, and possibly a large one, in raising the average level of herd-resistance. Further experiments are in progress; two herds are receiving immigrants—one of normal uninfected mice, the other of mice that have been exposed to infection in another herd; the fluctuations in the death rate of the two herds are being recorded.

The phenomena of epidemics amongst wild rodents are being studied by a group of workers at Oxford. Wild rodents have been shown to be subject to periodic fluctuation in numbers; there is a period of increase from minimum numbers up to a maximum, and then an epidemic destroys most of the animals in the population affected, so that they begin again to increase from a minimum. These fluctuations are frequently very regular, and epidemics can be predicted with some certainty; work was begun in 1925 preparatory to an investigation of an epidemic among English mice predicted for the early part of this year.

Concluding Notes.

The work of the Industrial Fatigue Research Board is described in the Board's annual report, which is published separately. There is a short section in the Council's report dealing with the Travelling Fellowships of the Rockefeller Foundation of New York, the arrangements for which have been generously renewed by the Foundation, the awards being again entrusted to the Council. The report ends with a statement of the alterations in the composition of the Council, and a warm and affectionate tribute is paid to the services, both scientific and administrative, rendered by the late Sir William Leishman throughout the whole period of the Council's existence.

ROYAL MEDICAL BENEVOLENT FUND.

At the last meeting of the Committee thirty-four cases were considered and £440 voted to twenty-nine applicants. The following is a summary of some of the cases relieved.

Widow, aged 76, of L.R.C.S.Edin. who died in 1893. Her only income is the old age pension. She lives with two sons; the younger is unemployed and the elder finds it hard to keep three persons. Voted £26 in twelve monthly instalments.

Widow, aged 44, of M.R.C.S. who died in July last from septicaemia after an operation on a patient. She has two sons; the elder, aged 20, earns £65 a year, and the younger is aged 8. When late husband's estate is settled the estimated income will be about £110 a year. Voted £20.

Widow, aged 55, of M.B. who died in 1923. She has no children, and supplements her income of £35 per annum by taking paying guests. She lives in her own house, rates on which amount to £25 per annum. She asks for help as she has had no paying guests for the past three months. Voted £18 in twelve monthly instalments.

L.R.C.P. has been unable to obtain work owing to age (70) and recently had a stroke. He is now in a home, and, as his savings are exhausted, is dependent upon charity. Previous help given by the Fund amounted to £68; further £15 voted at this meeting.

Subscriptions may be sent to the Treasurer, Sir Charters Symonds, at 11, Chandos Street, Cavendish Square, London, W.1.

The Royal Medical Benevolent Fund Guild still receives many applications for clothing, especially for coats and skirts for ladies and girls holding secretarial posts, and suits for working boys. The Guild appeals for second-hand clothes and household articles. The gifts should be sent to the Secretary of the Guild, 58, Great Marlborough Street, W.1.

British Medical Journal.

SATURDAY, MARCH 5TH, 1927.

OPHTHALMIA NEONATORUM IN MATERNITY WARDS.

ONE of the greatest achievements of preventive medicine has been the reduction in the incidence of ophthalmia neonatorum and the toll of blindness resulting therefrom. But as long as the conditions of birth are what they must be, and as long as virulent organisms obtain access to maternal passages, so long will there be an ever-present danger of the occurrence of this fell disease; and when there are many mothers and infants at close quarters in the same ward that danger is much intensified. In lying-in hospitals a generation ago ophthalmia of the newborn was as often seen as puerperal fever. Now such cases occur in a mere fraction of the patients. This rarity of a once frequent disease is only attained by constant unremitting vigilance; yet in spite of every care there may be cases or even a run of cases. Such an incident has lately occurred in Lancashire.

Five babies were born in the Moorlands Maternity Home at Accrington, and were there at the same time; these babies suffered from the disease; four lost the sight of one eye, and one the sight of both eyes. An action for damages was brought against the board of guardians which maintained the home. The evidence showed that one of the infants developed signs of inflammation of the eyes in a very mild form on the third day after birth, and thereafter the other infants showed the disease. The newspaper reports are indefinite in several important particulars, but from the general description of the symptoms and course of the inflammations it may be inferred that the attacks were those usual to the presence of the micrococcus of Neisser. The evidence showed that every effort had been made by the medical and nursing staff of the home to prevent disease and to check the attacks that appeared. Two separate inquiries were made into the methods of the home—one by a medical officer of the Ministry of Health and another by the M.O.H. for the district. Both officers agreed that there had been no lack of care in the arrangements. The judge, in his summing up, said: "It is a great mistake to suppose there is any duty to provide an ideal state of affairs . . . you can expect no more from persons who undertake this kind of duty than that a reasonable standard of care, skill, competency, and prudence shall be maintained." The jury found a verdict for the defendants.

How best can such standards be attained? What is the most prudent course to follow in the care of these infants? The first principle that must be kept in mind is this: the prevention of ophthalmia neonatorum does not begin with the birth of the infant; it is a matter of ante-natal care. As Gibson of Manchester pointed out so clearly a hundred years ago—when none knew of and some denied the possibility of a *materies morbi*—the disease could be prevented by removing the noxious matter from the maternal passages before childbirth, and if this had not or could not be done then it should be done during delivery, and from the child's eyes immediately after birth. The managers of maternity homes are in a particular difficulty in this matter. They do not know the state of the expectant mothers, and have not the care of them; so that, failing some satisfactory arrangement between the medical officers of these homes and the family doctors of the patients, the home starts under a heavy handicap. The private practitioner has learned the lesson Gibson taught; he knows now that the disease is, in all but the rarest cases, due to the micrococcus of Neisser; ante-natal examinations are becoming the rule, and these, with the knowledge that he has of his patients, give him ample warning of danger. He need not wait for the danger to materialize, for it is now known that even a mild course of treatment—one that is insufficient to eradicate the disease of the passages—will yet be effective in reducing the virulence of the micro-organisms so much that they will be little able to infect the infant's eyes.

The first rule of safety for the managers of maternity homes would be, therefore, that they should only admit expectant mothers who had been examined and were recommended by their home doctors or by the medical officers of an ante-natal clinic. With the mother in the home the next step may be through some system of douching prior to the onset of labour or in its early stages. Many have commended this procedure, others have held it an undesirable interference that may disturb the woman or check labour. But after the birth there are definite steps that must be taken in every case. The first of these is that indicated by Gibson—the removal of the noxious matter from the infant's eyes. In every infant born the face and eyelids are smeared with mucus, and there is often contamination with faecal material. Many employ "first aid" immediately the face of the child is born by wiping each eye as dry as possible with separate pieces of dry cotton-wool. When the mother is settled, then will come the real process of making safe the infant's eyes. The baby is washed, and all agree that the water used for the body should not be used for the face of the infant; that should be washed in fresh clean water, and for obvious reasons. Finally, the eyes themselves may be washed with some antiseptic as a final precaution. What this should be has been a matter of discussion: That some kind of antiseptic should be used in all cases all are agreed, for there is not an infant that may not get some noxious matter into its eyes, if only it be the colon bacillus. The destruction of this with a mild unirritating lotion may serve to reduce the liability to that slight irritation of eyes so commonly observed and is such a source of anxiety to the doctor, who has to determine whether or not this slight symptom is the onset of a serious inflammation or no more than is seen. There the bacteriologist will be the resource of the cautious clinician. Most, however, are agreed that, whereas in private the doctor has a wide latitude in his practice, in lying-in homes it is safer to assume that the gravest risk has been incurred, and to use some silver solution as the final application to the eyes of all infants born in institutions. In such places Credé's method, when used with knowledge, has been an unqualified success.

But the risks are not ended with the birth and the toilet of the infant. There is an ever-present risk of subsequent contamination of the eyes if by any carelessness napery used for the mother should also be used for the infant. There must be a strict separation of all appliances, and the nurse must be most scrupulously precise in washing and disinfecting her hands after each time of tending to the mother and before the baby is touched. This separateness of attention must extend to all the mothers and infants in the same ward. The ideal would be separate rooms—one

for each mother and child; next to that, cubicles sufficiently divided to prevent cross-communication. Short of some such arrangement a kindly but ignorant mother may undo all the care of the medical officer and the nurses by lending some of her napery to her next-door neighbour, not knowing that her kindliness is fraught with danger. Ante-natal care and supervision is first and foremost as the safeguard against ophthalmia of the newborn. Thereafter scrupulous care and an isolation as clean cut as human nature will allow, as rigorous as the ancient laws of the Levitical code, is the desideratum.

SCIENCE AND THE PREPARED MIND.

THOUGH there are many monuments to Pasteur there is none more appropriate than the fine edition of his collected works now being issued under the direction of his grandson, Dr. Pasteur Vallery-Radot. The fourth volume[1] has recently been published, and is a most fascinating record of investigations into the silkworm disease by one who was probably the most famous master of research which the world has yet seen.

The subject is graphically portrayed, because we have presented to us Pasteur's original papers and reports, together with the various documents and notes which passed between him and J. B. Dumas and the Minister of Agriculture, and his replies to numerous opponents, in particular the cultivators, who resented his being delegated to undertake the work, on the ground that he was a "mere chemist," and neither a silkworm cultivator nor a zoologist. The whole story, which reads like a romance, is well summarized by the editor in his introduction. The mulberry, as the food for silkworms, whose cocoons at one time brought in the enormous revenue of 100 million francs in a single year, had been appropriately designated "the Tree of Gold." Owing to disease among the worms, however, the silk industry had fallen away almost to nothing, and the cultivation of the mulberry had become a thing of naught because all efforts to rear healthy silkworms appeared hopeless.

In 1865 Pasteur had completed his researches on fermentation, had saved the wine and vinegar industry, as told in Volume III of this series, and incidentally dealt a mortal blow to the advocates of spontaneous generation. It was his intention and ardent desire to apply his energies to the study of contagious diseases and their causation, relying on the methods he had elaborated for the isolation of "germs," the employment of sterile culture media, and his surmise that these diseases were due fundamentally to fermentative processes. This intention, however, he reluctantly postponed, and, yielding to the solicitation of J. B. Dumas, who had witnessed his saving of one important industry, and prompted by his sense of patriotism, he put away for the time his ambition, in order to come to the rescue of France and try to save another important industry, which at this time was bankrupt if not moribund—the silk industry. At first he felt great diffidence in undertaking the investigation, telling Dumas that the subject was one of which he was completely ignorant, and that he had "never even touched a silkworm"; he was persuaded to take the matter in hand, and, by systematic study and the application of sound scientific principles, he succeeded in solving a problem which had baffled his predecessors, who had worked more or less haphazard.

This investigation occupied Pasteur for five years, and just when he had, as he believed, solved this obscure problem he found that the silkworms were subject to two diseases. That which was best known, to which he first gave attention, was *pébrine* (a name derived from the patois *pébré*, owing to the presence of disease spots like pepper-sprinklings in the worm), or "corpuscle disease" (from the little brownish-black spots indicative of the affection), or, yet again, *gattine* (derived from the Italian *gattino*, because the infected worms were said to raise their heads and thrust forward their feet after the manner of a cat in the act of scratching). He showed that *pébrine* was due to certain "corpuscles," and that the disease was transmitted through the larval stages from the egg to the imago, and that the healthy moth might acquire it by feeding on infected leaves. He crowned this part of his work by demonstrating how the disease could be eradicated by isolating the females so as to obtain unmixed broods of eggs and by retaining for breeding purposes only those which were healthy. Having arrived at this stage, and confident that his labours in this respect were finished, he met with a sore disappointment, which, however, he was able to turn to further advantage by renewed research, and which in the end redounded to his further credit. A box of healthy eggs turned black and died on reaching the cocoon stage, leading him to proclaim despondently, "Il y a deux maladies." To be brief, he demonstrated that this other infection, *flacherie*, which caused the deaths of many larvae, was due to a vibrio reproducing by means of "spores" and developing in the alimentary tract of the insect, and itself contagious.

The whole fascinating story affords an example, and an outstanding one, of science and the prepared mind; for Pasteur, though at first "roaming about in realms unrealized," intuitively hit upon the chief cause in quite the early stages of his investigation, and spent the following years in testing and re-testing his surmises, leaving nothing to chance and no point unproved, until he could present the whole subject vividly before the world. To prove the soundness of his reasoning, when the commission at Lyons requested him to send some guaranteed healthy seed (eggs), he forwarded, not only the healthy, which he predicted would thrive, but also three other lots for control—namely, "seed" infected by *pébrine*, others infected by *flacherie*, and a mixed lot of both; these last three he predicted would fail, and all turned out exactly in accordance with his prognostications.

Full credit must be given to Pasteur's able and enthusiastic assistants and collaborators — Gernez, Duclaux, Raulin, and Maillot—and to the unremitting encouragement and support he obtained from Dumas and from Béhic, the Minister of Agriculture, during the years when he had to meet and overcome considerable opposition, not only from the obstinate and ignorant, but also, unfortunately, from certain scientists envious of his success.

> "Such is the fate of place and the rough brake
> That virtue must go through."

The re-establishment of the industry, however, proved the soundness of his work, and the outstanding merit of this and his previously published researches on fermentation gained him the Copley Medal of the Royal Society in 1875, a fitting recognition of unselfish labour.

[1] *Œuvres de Pasteur* Réunies par Pasteur Vallery-Radot. Tome IV. Études sur la maladie des vers à soie. Paris: Masson et Cie. 1926. (Imp. 8vo, pp. viii + 761; illustrated. £1 3s. 4d.) The first volume dealt with his work on crystallography, the second with fermentations and so-called spontaneous generation, and the third with the diseases of wine and vinegar.

LISTER CENTENARY IN LONDON.

WE are now able to give some additional details with regard to the provisional arrangements for the Lister centenary celebrations in London next month. On the morning of Tuesday, April 5th, delegates will be received at 11.30 in the Great Hall of the British Medical Association, Tavistock Square, by the Prime Minister. Three delegates from abroad will give short discourses dealing with the effect of Lister's work on surgical and pathological science and practice in their countries. Delegates from other countries will present addresses, but will not be expected to read them. At 4 p.m. there will be a conversazione at the Royal College of Surgeons of England, and in the evening the Merchant Taylors Company will give a dinner in its hall, 30, Threadneedle Street. On the morning of the previous day (Monday, April 4th) the King will receive the delegates at Buckingham Palace, and in the evening (8.30) the Royal Society of Medicine will hold a reception at its house, 1, Wimpole Street, when Sir StClair Thomson will give an address. The memorial service in Westminster Abbey on Wednesday, April 6th, will begin at 11.15 a.m., and an address will be given by the Bishop of Birmingham (Dr. E. W. Barnes, F.R.S.). Delegates who may wish to do so will have an opportunity of placing wreaths at the memorial tablet to Lord Lister in Westminster Abbey. The hour at which the three discourses will be delivered at the house of the Royal Society of Medicine on that afternoon is 3 o'clock: the first will be by Sir Charles Sherrington, O.M., F.R.S., on Lister as a physiologist; the second by Professor W. Bulloch, F.R.S., on Lister as a pathologist; and the third by Sir Berkeley Moynihan, Bt., P.R.C.S., on Lister as a surgeon. The Royal Society will give a conversazione at its rooms in Burlington House at 9 o'clock that evening. Ladies accompanying delegates will be admitted to all the ceremonies, with the exception of that at Buckingham Palace and of the dinner at Merchant Taylors' Hall, to which personal invitations will be issued. An information bureau will be opened in the rooms of the Royal Society, Burlington House, on Saturday, April 2nd, and Sunday, April 3rd, from 10 a.m. to 5 p.m., and tickets for the various receptions and ceremonies will there be issued to the official delegates. The bureau will also be open from 9 a.m. on Monday, April 4th, but it is hoped that the majority of delegates will not defer application until that day. The Lister exhibition in the Wellcome Historical Medical Museum (54A, Wigmore Street) will be opened for inspection by the delegates from 9.30 a.m. to 6 p.m. on and after Monday, April 4th. All communications should be addressed to the Secretaries of the Royal Society, Burlington House, Piccadilly, London, W.1.

THE HISTORY OF INSULIN AND ITS MANUFACTURE

DR. H. H. DALE, director of the Department of Biochemistry and Pharmacology of the Medical Research Council, presided at the Royal Society of Arts on February 23rd, when a paper was read on the manufacture of insulin. Dr. Dale said that the manufacture of insulin was a very important achievement of British industry. When the discovery of insulin was first made known he was a member of a small deputation sent out to Canada by the Medical Research Council to report on the subject. He and his colleagues felt that there could be no question as to the genuineness and importance of the discovery, but had a certain doubt as to the steps to be taken to provide insulin in this country. Some were inclined to the view that the manufacture here would be hopelessly handicapped, chiefly because one large and justly honoured American firm had been closely concerned in the counsels of the institution in which insulin was worked out, and so was already a year ahead, and also because the slaughtering industry in America was on a vast scale and magnificently organized, whereas in this country it was on a small scale and comparatively unorganized. Thus there was a great deal to be said for the view that this matter was better left to the Americans. But the British manufacturing industry was not inclined to agree, and the result had been an achievement which was justifiably a matter of national pride. Within eighteen months of the return of the deputation manufacture was started by several firms in this country, and now, not only had British firms caught up with American in respect of quality and output, but had an excess production enabling them to export to countries which had not been able to get to work so quickly. Moreover, the price of insulin had been reduced to a level which would at first have seemed incredible; at the beginning insulin had been a rich man's remedy, but to-day that position had completely changed, and even if the poor man had to pay for it himself it represented not much more than he would afford for tobacco. Dr. Dale added that he was glad to have the personal friendship of the devoted and ingenious young workers who had brought this thing to a final solution in one of the great Dominions. He would not diminish by a breath the credit that was rightly due to them, but at the same time they had forerunners who were also deserving of thanks, especially Professor Minkowski, who had just retired, and whose experiments as far back as 1889 laid the foundation of the knowledge which was bound in due course, once the right method was discovered, to lead to the production of such a substance. He wished also to say this, that this work had resulted from experiments on animals, chiefly and inevitably on dogs. At that moment there was a bill before Parliament which, if carried, would make the continuance of this work impossible in this country—in this country alone among the civilized nations of the world. He had the greatest respect for our legislators, but he was bound to say that on such a matter he would have preferred that the decision could have rested on the vote of those who knew by personal experience the difference between the life they lived in the pre-insulin era and the life they lived now. Mr. Francis H. Carr, president of the Society of Chemical Industry, then read his paper, in the course of which he exhibited what he called a "flow sheet" of insulin manufacture, from the collection of pancreas at the slaughterhouse, through more than twenty processes of extraction and purification, to the actual production of insulin. In brief, the process consisted of dissecting the pancreas glands, grinding or mincing, rendering the material acid to *p*H 2.5 or alkaline to *p*H 7.0, in order to set free the insulin from the tissue on which it was adsorbed, extracting it with alcohol of such a strength that but little of the enzyme was dissolved and as much as possible of the insulin, clarifying the extract, concentrating at a low temperature, precipitating the proteins, and, finally, formation of picrate and regeneration as a hydrochloride. Purification was thus effected by combining the use of precipitants, such as picric acid and ammonium sulphate, with iso-electric point precipitation. Mr. Carr said that when first the manufacture was started the yields obtained were very low, being but 50 units to the kilogram of pancreas. There was also at first a great loss of alcohol. As knowledge extended and the plant was perfected, it had been possible to increase the yield twentyfold and to reduce the loss of alcohol to a very low figure. The selling price of insulin was thereby reduced by successive stages within the first year of its manufacture from 25s. to 2s. 8d. for a bottle of ten doses. At the same time, it had been possible gradually to improve the purity of the insulin as issued for use. Mr. Carr also referred to the fact we mentioned last week, that quite recently three German workers—Frank, Nothmann,

and Wagner—had discovered a derivative of guanidine which produced effects similar to those of insulin, though much less intense. Guanidine itself had been shown to be too toxic for use in the treatment of diabetes, as had another guanidine derivative, agmatine, which was prepared from herring sperm, but this new guanidine derivative was said to exercise on diabetic patients the same effects as insulin, though more slowly, and it had the advantage that it could be administered by the mouth. Unfortunately, it was not devoid of toxic effects, and an overdose caused loss of appetite, nausea, and vomiting. Nevertheless, it was the opinion of the German workers that it might usefully be employed to supplement insulin treatment, or might be used by itself in mild cases. Perhaps its greatest interest was that it might prove a step in the direction which, through the study of other derivatives of this nature, would lead to a true substitute for insulin. The elucidation of the chemical nature of insulin itself was a step to be most profoundly desired; it might involve the destruction of £1,000 worth of insulin, but the priceless contribution to human happiness which the discovery of insulin represented made even that expense no more than a grain of sand on the seashore. Once the chemical nature of insulin was understood, it was not too much to expect that the history of adrenaline and thyroxine would be repeated, and the manufacture of artificial insulin, indistinguishable from the natural product, be possible. Mr. Carr's paper was all the more appropriate in view of the fact that one of the most impressive exhibits in the very greatly enlarged chemical section of the British Industries Fair at Shepherd's Bush was an insulin-manufacturing plant working as a continuous process.

A CENTURY OF PHYSIOLOGY.

UNIVERSITY COLLEGE is including in its centenary celebrations a series of addresses. The first was delivered by Professor E. H. Starling, F.R.S., on February 28th, and was entitled "A century of physiology." Professor Starling noted that the celebrations coincided with the centenary of the birth of Lister, with the jubilee of the Physiological Society, and almost with the three hundredth anniversary of Harvey's book on the circulation, which marked the birth of modern physiology. The resuscitation of observation by the anatomists was followed by the resuscitation of experiment by Harvey, whose method was experiment and induction. The investigation of the functions of other organs than the heart had to wait a long time, so that a hundred years ago physiology was still backward, though progress had been made by Malpighi, Stephen Hales, and others. When the exact sciences of chemistry and physics were called in to aid, physiology began to advance. Lavoisier's researches on the conservation of matter, and Helmholtz's on the conservation of energy, helped in the advancement, but physiology was not freed from its fetters until 1871. From 1850 to 1870 Claude Bernard investigated the vasomotor system and the sugar functions of the liver. From 1863 to 1875 Marey examined the mechanics of the circulation. At the end of fifty years physiology had become an exact science. There had been an awakening of the human spirit, due largely to the fact that men of wide sympathies were employed to impart old knowledge and new learning. Such a man was Sharpey. His works were anatomical in nature, but he was a great teacher; and his pupils were destined to initiate modern physiology. Professor Starling sketched briefly the careers of Michael Foster and his pupils Gaskell, Langley, Sherrington, Balfour, and Vines; of Martin, who went to Baltimore; of Burdon-Sanderson; and of Ringer. He showed that Sharpey was thus the originator of physiology in London, Oxford, Cambridge, Liverpool, and the United States. Co-operation of physiologists with one another, however separate their places of residence, was shown in the foundation of the Physiological Society, since the science could not be kept within the four walls of any building. The lecturer then mentioned the work of Lewis on the electro-cardiograph; Ringer's investigations of the action of salt solutions on the heart; and his own work with Bayliss on internal secretions. He concluded by saying that the past history of the college in physiology was full of hope; that the golden age was supposed to be an epoch of great achievement; but that the work of physiology in medicine had only just begun. At the conclusion of the address a vote of thanks to Professor Starling was adopted, on the motion of the chairman, Sir John Rose Bradford, President of the Royal College of Physicians, London, and consulting physician to University College Hospital, who next May will himself give another of the centenary series of addresses, when his subject will be "University College, London, and medical education."

FOOT-AND-MOUTH DISEASE.

THE committee appointed in 1924 to investigate foot-and-mouth disease has just published its second progress report,[1] which reviews the work carried out during the past year. The committee points out that research into this disease is peculiarly tedious and necessarily slow, and consequently the work is still far from completed. Guinea-pigs are being extensively used for experimental work, and by this means lines of research can be more quickly investigated than if the large farm animals were employed. Attempts to cultivate the virus have consistently failed, and the view is expressed that the Frosch-Dahmen discoveries were susceptible of another interpretation. Until the virus can be cultivated animals must be used as reservoirs from which the material may be drawn, and it has been found that by successive passages through guinea-pigs a virus of high potency can be obtained, and this may be kept for some time without any great loss in virulence; in some instances it was maintained for over a year before becoming impotent. Virus obtained from the blood is not so strong as that recovered from the vesicles. It was found that although rapid drying quickly destroyed the virus, it survived slow drying provided that it was maintained in a dry condition; but it is not suggested that in ordinary circumstances virus dried on inanimate objects would survive for long as a source of infection. Virus dried on hay, woven fabrics, and so on, remained active for some considerable time; the time varied with the nature of the substance—on woollen fabric for between two and three weeks, on hay eight to fifteen weeks, on bran up to twenty weeks, and so on. A calf contracted the disease from hay a month after this had been infected, demonstrating that fodder might be a natural source of infection. The virus was also found to remain alive for considerable periods in blood and bone marrow, and was in this way recovered from imported pig carcasses. Light, and 0.1 per cent. formalin, as well as various other chemical disinfectants, were found to destroy the virus in fluid from the vesicles. The committee has confirmed the plurality of types (to which we have previously referred), and it has shown that in the vast majority of cases the O type was present in Britain; only on one occasion (from an outbreak in Sussex) was the A type recovered. These types are fixed, and do not change their characters after repeated subinoculations. Investigations on small mammals showed that rodents other than guinea-pigs could be infected by direct inoculation, but the disease is hardly ever passed from one to another by natural means. Neither dogs nor cats are easily infected, but young animals are more susceptible than adults and cats than dogs. Birds appear to be refractory. Artificial

[1] Ministry of Agriculture. 1927. H.M. Stationery Office. 3s. net.

immunity has also been studied. Guinea-pigs appear to be immune for about three months after having passed through an attack, but after that the immunity gradually disappears, the local immunity ceasing before the general immunity. Inoculation with the serum of a hyperimmune animal stops generalization of the disease from intradermal inoculation, and may prevent all symptoms from intramuscular injections. A small dose of active virus may also produce a partial active immunity, while a virus (vaccine) treated with formalin regularly produces a partial immunity in guinea-pigs, and sometimes complete immunity results. There is as yet no evidence that a virus so treated will in small quantities protect cattle, but a sufficient dose will protect a majority of the animals. Attempts have also been made to use a combined serum and vaccine in cattle, and although only a few animals have been treated the results are promising. The report contains a mass of detailed evidence, of which what is here written is only a partial summary. Although no definite decision is immediately possible the results are distinctly promising, and augur well for, we hope, a not too distant future when our method of eradicating foot-and-mouth disease with a pole-axe will be replaced by the more scientific and more accurate one of the hypodermic syringe.

TOTAL CYSTECTOMY.

IN another part of the JOURNAL (p. 425) will be found a report of the paper read before the Urological Section of the Royal Society of Medicine by Mr. Henry Wade on the treatment of malignant disease of the bladder. In it Mr. Wade expresses the view that palliative measures, including the use of radium and of deep *x*-ray therapy, have failed, and that the only hope of effectually dealing with the condition lies in surgical extirpation. He advocates the more frequent employment of the operation of total cystectomy, which, he thinks, should be regarded, not only as a means of dealing with operable cases in which there is a hope of entirely removing the growth, but also as palliative treatment for the relief of the pain and extreme discomfort that is the fate of every patient dying of malignant disease of the bladder. He envisages the time when, with improvement in technique, especially with regard to the preliminary transplantation of the ureters, total cystectomy will become a routine operation, and urges those who deal with these difficult cases to spare no effort in doing the preliminary work that will be necessary before this ideal is reached. Mr. Wade's views will not be readily accepted by a great many surgeons. Total cystectomy is a mutilating operation, and it is only the failure of all other methods to mitigate the sufferings of a patient dying of malignant disease of the bladder that can render it justifiable. When, however, we remember how great are those sufferings we cannot fail to welcome any effort, however heroic it may be, to combat them. At some future date, when the vast amount of research that is being conducted on the subject of malignant disease has borne fruit, such mutilating operations as total cystectomy will probably be looked upon as relics of a bygone age. Medical men will refer to the heroic efforts of the old surgeons to deal with malignant disease by means of the knife in the same terms that we at the present moment employ when we discuss the efforts of pre-Listerian surgeons to deal with hospital gangrene. But alas! those days are not yet come, and at the present time the only weapon in the fight against most forms of malignant disease is the knife. In the case of some other organs, such as the breast, there has been a reaction against the extensive operations practised ten years ago, but it would appear from Mr. Wade's remarks that in dealing with carcinoma of the bladder our best hope lies in methods that are still more sweeping. If this be so, and if a desperate remedy must be adopted for a desperate disease, we can only hope that those who are called upon to undertake such a mutilation as total cystectomy will succeed in so improving the technique that the operation will be freed from some of the difficulties that at present attend it, and the comfort and the safety of the patient be thereby increased.

PROGNOSIS IN INSANITY.

THERE is a widespread popular belief that diseases of the mind are incurable, and that "once a madman, always a madman," is a correct representation of general experience. Every now and then effect is given to this view by juries in cases of alleged wrongful certification, when the jurymen, seeing the patient now sane, refuse to believe that he was once out of his mind, and may punish the certifying medical man for taking those very measures which restored the patient to health. In the new number of the *Journal of Neurology and Psychopathology*, which, as our readers know, is now published by the British Medical Association,[1] this pessimistic view of psychotherapy is combated in an editorial article. Some striking statistics are quoted from an article by Dr. Earl D. Bond, whence it appears that out of a total of over a thousand consecutive mental cases admitted to the Pennsylvania Hospital, over 26 per cent. remained well for at least five years, and were not known to have suffered relapse afterwards. As most of these patients were suffering from the more severe types of mental disease, these figures are sufficiently striking, especially when looked at in conjunction with the fact that only one-third of the remaining cases did not improve. To those unfamiliar with the treatment of mental disease it may come as a surprise to learn that a certain number of patients seem in the long run actually to be benefited by an attack of acute mental derangement, which, as the writer of the editorial article in our contemporary says, appears "to have a cathartic effect—it clears the air, as it were, and affords a release of pent-up emotional tension." In a similar way, according to some observers, an acute illness such as pneumonia or carbuncle is sometimes followed by the disappearance of symptoms of mental derangement, and it is possible that these two events may stand in the relation of cause and effect. There seems no reason to suppose that an attack of malaria has a specific effect on general paralysis of the insane, and it is therefore thought probable that its curative properties lie in the pyrexia and the profound disturbance, the shaking up, of the whole nervous and circulatory systems. It is not possible to compare Dr. Bond's figures with those relating to physical disease, for there is little information as to what happens to patients who come consecutively to any surgical, medical, or special hospital, or to the consulting rooms of general practitioners or specialists. There are plenty of statistics about many diseases, but none about the general run of patients. The editorial writer suggests that the surgeon, physician, or general practitioner would be satisfied with the return to full function in 25 per cent. of his consecutive cases, judgement being made five to ten years after the beginning of treatment. As even when patients are seen late by the psychiatrist consecutive cases may be expected to show a full return to health in 25 per cent., and amelioration in 15 per cent. more, it is argued that the general practitioner first, and the psychiatrist later, may feel justified in taking as hopeful an attitude as for surgical cases. Although specific remedies for the cure of psychoses are not known, spontaneous cures occur which have no parallel in purely physical diseases of a chronic type. Since some such patients recover there can have been no irreparable structural change. The editorial article thus ends on

[1] To be obtained from the British Medical Association, Tavistock Square, London, W.C.1. Annual subscription 30s.; single numbers 8s. 6d. post free.

a note of confidence and hope for the future, which we venture to think is well justified by the considerations set forth, and in this connexion we would commend to notice the admirable speech on present-day lunacy administration by Earl Russell in the House of Lords, reported at page 446. The same issue of the *Journal of Neurology and Psychopathology* contains a number of original articles of particular interest to specialists, as well as a series of abstracts occupying thirty pages, and many reviews and notes on books.

INFLUENZA.

In the week ended February 26th there was a decrease in the number of deaths from influenza in London, but taking London and the 105 great towns of England and Wales together there was an increase, the number being 1,023, as compared with 990 in the previous week, and 759 in the week before that. In London proper the total deaths fell from 128 to 81, and in outer London from 112 to 67. The highest number in any town in the country last week was at Manchester, where the deaths rose from 36 to 88. The reports received by the Scottish Board of Health suggest that there were more persons suffering from influenza last week than in any other week this year. There was a large increase in the number of cases in Dundee, following on the rise in absences from school reported in the previous week. The medical officer of health estimates that there were between 4,000 and 5,000 new cases, but says that the type is mild, and is not regarded by medical practitioners as true influenza. A much heavier incidence is also reported from Motherwell and Wishaw and from Dunfermline (though Kirkcaldy had fewer cases), while less marked increases occurred in Hamilton and Ayr and the counties of Lanark and Fife. In the north of Scotland influenza has been prevalent for some weeks in most districts. There have been many absences from school, and in a few cases schools have been closed. The symptoms seem to have been much the same as elsewhere in Scotland, a sore throat often being the first sign, and there have been comparatively few cases of complications, but an attack often leaves behind it a persistent cough. Aberdeen burgh is one of the few places in the north able to report a lower incidence. In Edinburgh the slight epidemic seems definitely on the decline. There is little change from the normal in Glasgow. There are no cases in Clydebank, but elsewhere in Scotland no considerable fall in the number of cases has been observed.

RABIES.

This country shares with Australia and New Zealand, and a few other countries, including, according to Mr. Frederick Hobday, F.R.C.V.S., Norway and Sweden, the distinction of being free from rabies, a disease which is present in every other country of the world. Great Britain has been kept free by a rigidly enforced quarantine on all canine animals entering the country. A letter in the *Times* last week pleaded for a reduction of the present six months' period of quarantine, and suggested that this was fixed as the result of panic legislation. Those who signed that letter entirely miss the point of our antirabies legislation. They state that a dog which has been infected with the disease "normally" develops symptoms within three months of having been bitten. In this they are quite correct; but they overlook the point that longer periods are known, and it is against the abnormal cases that we must take preventive measures. The Minister of Agriculture, in a reasoned reply to this letter, showed that not only was the period of six months fixed as the result of experience, but that within the last few years it has actually been necessary to prevent the entry of several cases where the infective period was well over the three months suggested. Mr. Hobday has recorded in the *Times* the case of a dog in quarantine which was about to be released after the usual six months' detention, but was retained at the request of the owner, who happened to be abroad, and died after showing all the symptoms of rabies (confirmed by *post-mortem* examination) a fortnight later. It is imperative that rabies should be kept out of the country, and until biological means are available which can be thoroughly depended upon to do this we must needs rely on adequate and stringently applied quarantine. Recently a single-injection vaccine has been extensively used abroad in countries where the disease has become a menace—in the United States, for example—and in these countries it has proved its value. It has been used entirely as a preventive, and has been almost exclusively employed to protect dogs against future bites. Its value, if any, as a curative vaccine for animals which have been previously bitten by a rabid dog has yet to be proved; indeed, such evidence as is available suggests that it is not effective in this respect, and accordingly it cannot be used to replace an effective quarantine in such countries as Great Britain, which are free from the disease, although it is proving invaluable in those places where the disease is endemic. It is a truism that when rabies is eliminated in the dog it will also be eliminated in man; but until this has been done throughout the world, or until there has been discovered a vaccine which can be relied upon to prevent the disease from developing in animals which have already been bitten, we cannot afford to sacrifice the security of the country to the interests of a very small minority.

R.S.P.C.A.

In a leading article published last week on the experimental method in the healing art (p. 390), and also in a note on page 394, it was mentioned that the Royal Society for the Prevention of Cruelty to Animals was using its position and influence to obtain signatures to a petition to Parliament to forbid all experiments on dogs. It is now announced that the society has reconsidered its position, and that the council has informed the branches of the society that its support of the bill has been withdrawn. The petition of the National Canine Defence League is, however, being persevered with. We quoted last week (p. 390) the second paragraph of the league's petition, which insinuated that it was on account of the docility of the dog that it had "of late years been specially selected by vivisectors for extensive and peculiarly revolting and painful experimentation, and also for demonstrations of a prolonged and agonizing nature before classes of students." As we said last week, the substance of this statement is false. The Science Committee of the British Medical Association is meeting this week (March 4th), but too late for us to announce any decision it may come to.

Sir Arthur Keith began a course of six Hunterian lectures on the peoples of the East, past and present, at the Royal College of Surgeons of England on Wednesday last. The third lecture, on Monday next, will contain an account of the earliest Sumerians so far discovered; it will be based on a study of human remains found at and near Ur of the Chaldees. The fourth lecture, on March 9th, will deal with the racial characters of Sumerians and Babylonians, and their relation to other peoples. The lecture on March 11th will be on the people of Egypt, past and present; and the last lecture, which will be given on March 14th, will discuss the distribution of racial types in southern and western Asia in past times. The hour of the lecture is 5 o'clock on each day.

New Zealand.

[FROM OUR CORRESPONDENT.]

HOSPITAL FINANCE.

THE hospital boards in New Zealand have a dual function—that is, not only the administration of public hospitals, but also of charitable aid by way of indoor and outdoor relief. For the past year the expenditure for these purposes has been: Hospital maintenance, £925,000; charitable relief, £371,000; administration, £49,000; interest on loans, £52,000; district nursing, £18,000; capital expenditure, £578,000; total, £1,993,000. The total income of the boards for the year was £1,473,000, of which sum £580,000 was a direct grant from the Government, and £526,000 was obtained from rates levied by local bodies. To the Government contribution there must be added a further sum of £107,000 expended on thirteen hospitals administered directly by the Government, but towards the maintenance of which it received £68,000 in payment by patients. The Minister of Health states that New Zealand has more hospital accommodation per head of population than any other country in the world, and that no other country has a lower general death rate, tuberculosis death rate, or infantile mortality rate. The main reason for the great amount of hospital accommodation in this Dominion is the scattered population. There is a tendency for the smaller hospitals to undertake too much because they are in comparatively isolated positions, but with improved means of transport they must become increasingly subordinate to the hospitals in the larger centres of population. The hospital rate in Dunedin is 4½d. in the £ on the property of the ratepayers living in the city and surrounding district, and this rate at the present time is barely sufficient.

WESTERN SAMOA.

Western Samoa is a mandated territory under the control of the New Zealand Government. The report on the public health of the islands for the year ending March, 1926, shows steady progress. The Samoans are not a dying race, and gained in the year, by natural increase, 1,176, the total population being about 38,000. Infantile mortality was unusually high owing to the prevalence of whooping-cough. As 16 per cent. of the native population are under the age of 4 years, child welfare work has been of prime importance. The medical service in Western Samoa has done much towards the eradication of hookworm and yaws. The latter disease is almost eradicated in its infectious stage. The Samoans, recognizing that at least three injections of novarsenobillon are necessary for a reasonable chance of cure, have passed a law in their native parliament to compel persons suffering from yaws to undergo the necessary treatment. The medical officers of the Health Department in Samoa, as the result of their experience, are convinced that one attack of yaws produces an immunity against subsequent attacks of either yaws or syphilis. They are producing a juvenile non-immune population, but they hold that the non-immune population that is gradually growing up will not be liable to spread syphilis through the islands for at least ten to fifteen years. With a highly efficient medical service in this mandated territory there is reason to believe that syphilis can be as easily controlled as yaws.

England and Wales.

DISTRICT NURSING IN LONDON.

SIR WILLIAM COLLINS, presiding over the annual meeting of the Central Council for District Nursing in London on February 24th, said that during the twelve years of its existence the council had distributed £44,797 to its federated associations. In the annual report it was stated that the main work of the council during the year 1926 had been the further consolidation of district nursing in London and extension of the service on the outer borders of the county and in Middlesex. A new association had been established on provident lines at Eltham Hill; two Ranyard nurses had also taken up work there, and additional nurses would shortly be required for the new estate at Roehampton. Good progress had been made by the new association formed at Twickenham at the end of 1925, and there had been considerable increase in the work undertaken by that for Osterley, Hounslow, and Heston. A nursing association at Ealing had been federated with the council, and at Mill Hill an association affiliated to the Queen's Institute had been re-formed. The Willesden association began to operate in September, and in Hornsey efforts were being made to co-ordinate the associations already at work, and to extend district nursing to the whole borough. Although it had not yet been possible to make permanent arrangements for Tottenham, the co-operation of the North London and Hackney District Nursing Associations with the Sisters of St. Vincent de Paul had borne fruit in very valuable work. It is hoped that a district nursing association may be established in Tottenham when the present temporary arrangements come to an end next May. In view of the prolonged period of midwifery training now required, and the increased fees, the midwifery bursaries have each been raised to £30; three were awarded last year. The council reported also that its invested funds were practically exhausted, and that unless fresh sources of income could be found shortly the annual allocation of grants would have to be reduced. A distribution of £1,000 from invested funds was made during 1926. The trustees of the London Parochial Charities entrusted the council with £2,800 for distribution, £300 for administrative work, and £100 for midwifery bursaries, and £766 was received from the Ministry of Health in respect of the midwifery and nursing carried on by certain associations. The representatives of the British Medical Association on the Central Council in 1926 were Dr. T. W. H. Garstang, Dr. William Paterson, and Mr. E. B. Turner.

HEALTH PROPAGANDA BY THE LONDON COUNTY COUNCIL.

At the meeting of the London County Council this week the Public Health Committee submitted a report on the publication of information on health questions. The Council's powers in regard to health propaganda were previously limited to the subject of venereal diseases (work which was undertaken on the Council's behalf by a voluntary association), but under the London County Council (General Powers) Act, 1926, extended powers have been obtained to enable the Council to undertake or assist such work on the preventive side of public health as appeared desirable. The Public Health Committee is of opinion, however, that in view of the activities of voluntary bodies and the interest now taken in the public press in all matters concerning the health of the individual and the community, it is unlikely that there will be any scarcity of useful information available to the public on health questions, and that the Council should confine itself for the present to the circulation from time to time among medical officers of health of the metropolitan boroughs and medical practitioners of such medical information in the possession of the Council as it would be difficult for them to obtain in a comprehensive form without considerable study and research. The matter would be restricted to information which could not readily be obtained from any other source, and discrimination would in each case be exercised in its distribution. It might also be desirable to issue to the press on special occasions statements as to any epidemic diseases. The Council does not propose for the present to make any arrangements for the delivery of lectures or the display of pictures.

COMPLETION OF THE SCHOOL MEDICAL SERVICE.

The Board of Education has issued a circular (1388) with reference to the standardization of expenditure by local authorities, which is now being gradually accomplished. The concluding paragraph deals with the School Medical Service, and is as follows.

6. *Special Services.*—Under this head the Board feel that the first aim of national policy should be the completion of the School Medical Service. It will be understood that the Board do not underrate the value of special schools, but while no rule can be laid down which is universally applicable to all areas and to all types of physical defect, the completion of the School Medical

Service would appear to be of primary importance, and the Board suggest that authorities should concentrate on this definite aim. With regard to provision for mentally defective children, authorities will be aware that this very difficult problem is now being explored by a special committee, and, save in exceptional circumstances, it would not seem prudent to incur heavy expenditure at the present moment on new schools for such children or on enlargements of existing schools. The adoption of such a policy may make it necessary for authorities to reconsider their programmes under this head, and in some cases to substitute proposals in regard to the School Medical Service for proposals involving additional special school accommodation.

DORSET COUNTY HOSPITAL: AN OPHTHALMIC DEPARTMENT.

A new ophthalmic department was presented to the Dorset County Hospital on February 17th by the Society of Dorset Men in London, in memory of its first honorary secretary, the late Mr. William Watkins. The new department includes a dark-room for refraction, with special lighting and equipment for the examination of patients of all ages. Lord Ellenborough, chairman of the hospital committee, explained that the original suggestion for establishing an ophthalmic department came from the late senior honorary surgeon to the hospital, Dr. W. B. Cosens, but was not then carried out, for financial reasons. Sir William Lister, consulting ophthalmic surgeon to the London Hospital, gave an address on the place of the ophthalmological department in a general hospital, emphasizing the importance of team work. In many general diseases diagnosis depended upon an ophthalmological examination by an expert, while in general surgery an ophthalmic surgeon could give much assistance in certain cerebral conditions with regard to diagnosis, prognosis, and treatment.

POST-GRADUATE LECTURES IN THE PROVINCES.

It has been brought to the notice of the Fellowship of Medicine that certain provincial schools and medical societies are desirous of supplementing their ordinary courses of instruction by inviting teachers connected with the Fellowship to give special lectures from time to time at their school or society. We are asked to say that the Fellowship is prepared to accede to any such request, and would be glad to hear from those provincial schools which are desirous of procuring such lecturers in order that definite arrangements may be made. Its address is 1, Wimpole Street, London, W.1.

Scotland.

MEN'S HOSTEL AT EDINBURGH UNIVERSITY.

At a meeting of Edinburgh University Court it was announced that Mr. Thomas Cowan, retired shipowner, Leith, had offered a sum of £15,000 to enable the University to carry out a scheme for providing a residential house for men students. Mr. Cowan previously gave £10,000 to the University in appreciation of the work done by students during the general strike. The Court gratefully accepted the offer and decided to use the amount to provide a residential hall, to be called Cowan Hall, by adapting a row of houses on the south side of George Square, with necessary additions in the gardens behind. The house should accommodate about 125 students. Although small residential halls have already been instituted for certain definite groups of students, this is the first important step towards removing what has often been regarded as a reproach to the Scottish university system—the absence of provision for communal life among students.

VITAL STATISTICS.

The Registrar-General for Scotland has issued a short preliminary statement on the vital statistics of 1926, which will in due course be published in full in his seventy-second annual report. The births during the year numbered 102,450, equivalent to a birth rate of 20.9 per thousand, which is the lowest since 1918. The marriages were 31,241, a rate of 6.4 per thousand, which is the lowest since 1917. The deaths registered during the year were 63,775, corresponding to a death rate of 13 per thousand, the lowest on record with one exception. The proportion of illegitimate births, 6.9 per cent., is less than the mean of the last ten years. Deaths of children under 1 year numbered 8,515, giving an infantile mortality rate of 83 per thousand births, the lowest recorded with one exception. The death rate from pulmonary tuberculosis was 69 per 100,000, from all forms 99. Both these rates are the lowest yet recorded. Deaths from malignant tumours numbered 6,641, 34 below the previous year, but 690 above the mean of the last ten years. Among the larger burghs high birth rates were recorded in Coatbridge, Hamilton, and Greenock, 26.1, 25.8, and 23.9 respectively, and high death rates in Glasgow, Dundee, and Paisley, 15.1, 14.8, and 14.2 respectively. There were high death rates from epidemic diseases in Paisley, Glasgow, and Hamilton, and from pulmonary tuberculosis in Greenock, Falkirk, and Glasgow. In 1926, compared with the previous year, there were, over all, fewer deaths from enteric fever and pneumonia, but more from measles, influenza, encephalitis lethargica, and cerebro-spinal meningitis.

GIFFORD LECTURES IN GLASGOW.

In his last two lectures in the Gifford course in the University of Glasgow Dr. J. S. Haldane discussed psychology as an independent science. It must, he said, be regarded as a branch of knowledge dealing with the full experience of personality and the interest and values expressed in it. Since interest and values concerned questions of time as well as of space, psychology must be regarded as independent of biology. The view to which his course of lectures had led was that knowledge represented in psychological sciences was differentiated clearly from other kinds of scientific knowledge and was the most fundamental variety of scientific knowledge. He could not accept the view that physical science was the most fundamental variety of knowledge. In the concluding lecture Dr. Haldane said that the survey of the sciences had shown the difficulties and contradictions to which mere scientific interpretations of our experience led. These difficulties and contradictions concerned all that was of most moment and value. We might be materialists for whom, theoretically speaking, there was nothing but mechanical chaos in the universe, which involved experience as well as material happenings, so that such things as spiritual values could not exist. At the other extreme we might, he said, be religious mystics to whom the chaos of the visible universe was theoretically of no account. When we examined the body of knowledge presented to us by each science we found that it only corresponded partially or imperfectly with actual experience. Science brought us to a point at which we required more than science, and he hoped to pursue this subject further in his lectures next year.

GLASGOW ROYAL INFIRMARY.

At the annual meeting of contributors to Glasgow Royal Infirmary, the Lord Provost, who was in the chair, said that during the past twelve months a greater amount of work had been done in the infirmary than at any previous period in its existence, both as regarded indoor and outdoor patients. The average daily number of patients in the wards had been well over 700, although the reconstructed infirmary had been planned for a normal number of 664. He also referred to the celebration in April of the centenary of the birth of Lord Lister, who had been closely associated with the infirmary from 1861 to 1869. Authority was given to spend £65,000 on extensions, including the completion of the gatehouse block, which will contain casualty wards, a large hall for visitors, and a lecture theatre, which will be commemorative of Lister and will stand virtually on the site of the ward, recently demolished, in which Lister did his work during his Glasgow period. Mr. James Macfarlane, LL.D., chairman of the managers, said that before beginning to build the auxiliary hospital at Canniesburn, where a site of 31½ acres had been presented to the infirmary, it was decided to have from £50,000 to £60,000 in hand, and of this fully half had been already received by voluntary subscription. The out-patient department and the ophthalmic institution were both at present inadequate to cope with the demands which were made upon them, and plans were under consideration for housing both departments in one building, to be erected on a site recently acquired by the infirmary in Collins Street and Cathedral Street.

MENTAL STRAIN AMONG SCHOOL CHILDREN.

The Scottish Education Department has issued a circular about the leaving certificate examination, in which it is stated that the undoubted prevalence of overpressure among candidates presented for the examination has for some time been giving serious concern to the department. The results of excessive mental fatigue may become immediately evident by conspicuous failure to pass, or, on the other hand, the damage done to health may not reveal itself until permanent impairment of vitality is found in later years. Only a relatively small number of pupils have a real gift for the linguistic and mathematical subjects which form the backbone of school and university study. To reduce the time for physical training in the later stages of study is a mistaken policy, which defeats its own end. In adolescence the demands on the vital resources are peculiarly heavy. Mental strain actually hinders the satisfactory growth of body and mind; it may have a bad influence on conduct, and certainly reduces the effective power of resistance to diseases such as tuberculosis. Everything possible should be done to lighten the burden of those children whose home circumstances are difficult or who have to undertake a long journey to and from school. The department considers that the general situation can be met most satisfactorily by close co-operation between school medical officers and teachers, and the vigilance of the school medical officer should be redoubled during the last two years of the secondary school course. Teachers should always be on the watch for signs of overstrain and should direct the medical officer's special attention to pupils whose work shows unexpected deterioration. The need for such attention is said to be particularly great in the case of girls, who do not so readily as boys strike a happy mean between idleness and overwork. Among the symptoms of overstrain mentioned are a tendency to unusual sleepiness during the day, over-anxiety with regard to lessons, and a distaste for games and physical exercises.

Correspondence.

SUBSCRIPTIONS TO THE ASSOCIATION.

SIR,—The application for payment of the 1927 subscription to the British Medical Association met with a very good response in the first two or three days of this year. More than 10,000 cheques, representing about one-third of the members, were received within the first week, and for this response the Finance Department desires to express its sincere thanks, but there are still many members of the Association who have not yet forwarded their subscriptions for the current year, and the additional cost of preparing and posting reminders to those whose subscriptions are outstanding involves each year a large sum which could be better employed in the Association's interest.

An earnest appeal is therefore made to those who have not already remitted to send their subscription for 1927 immediately, adding thereto such sums for the charities or the other funds mentioned on the application form as their instincts prompt and their means will allow.—I am, etc.,

L. FERRIS-SCOTT,
Financial Secretary and Business Manager.

British Medical Association House,
Tavistock Square, W.C.1, Feb. 25th.

THE MENTAL DEFICIENCY BILL OF 1926.

SIR,—While recording my admiration of Dr. Tredgold's faithful advocacy of this unfortunate bill, may I be permitted to comment on two of its suggestions.

The Definitions.

The weakest clause in the Act of 1913 time has shown to be that containing the definitions; it is easy now for some to maintain that this clause should never have been admitted; yet, if the framers of 1913 altogether could not have foreseen the consequences of their Act, what subtler justification have the advocates of 1926 in desiring to tinker with and not to delete this clause? One is curious, also, to ask why this fervid endeavour to define a pathological condition, admittedly difficult of definition, in a legal document? Is it really necessary for the inexpert layman dealing with these cases to consider, in every instance, whether or not the condition present existed "from birth or from an early age," as required by the Act, or is "innate or induced after birth by disease, injury, or other cause," as proposed by this bill?

Let us consider this principle from another point of view. Does the law require, for example, that a lay magistrate shall be convinced that an alleged case, say, of small-pox, is small-pox before the public health authority may take steps to isolate it? Is even the term "infectious diseases" defined in any of the Acts that deal so successfully with these conditions? Had it been defined, would these Acts have worked as easily and as efficiently as they do? Should we not have seen extraordinary exhibitions of forensic skill, paid for at hundreds of pounds per day, triumphantly demonstrating that that particular case of small-pox was not small-pox, but simply German measles? Errors in diagnosis, of course, occur in the world of the exanthemata, but how many isolation hospitals have been arraigned for the unlawful detention of the innocent?

A time there was when many maintained that to drive unfortunate men and women and little children from their happy homes to the dreary isolation hospitals, there to contract a multitude of evils, to prosecute and fine them if they refused to go, was an unjustifiable interference with the liberty of the subject, when honest men contemplated with genuine horror "this growing power of the doctors." That time, happily, has passed, and to-day the public health authority enjoys the confidence it deserves, because it has expected nothing less and rightly resented even the remotest reflection on its integrity or its intelligence, because in all things pertaining to the public health the law has learned to mind its own business, and does so contentedly and without undue affectation. Has not the time come when psychiatrists should demand a corresponding courtesy?

There is, of course, a distressing difference. Doctors long have been trained in the detection of infectious disease, but the systematic study of amentia is still unknown in our medical schools—and, naturally, the public is suspicious. Yet the remedy, I fear, is not in the making of many definitions.

The addition of the words "or not under proper care or control."

Writing elsewhere,[1] as one of sixteen signatories, Dr. Tredgold points out that

> "under Section 2 (*b*) (1) a mental defective can only receive the protection of the Act if he be neglected, abandoned, or without visible means of support or cruelly treated. Experience has revealed the fact that these restrictions tell very hardly on, for example, a mother of a mentally defective boy or girl (under 7, or over 16, and not notified by the education authority), for whom she is anxious to secure the treatment and training that can only be obtained in a properly equipped and staffed institution. Unless she is able to pay the whole cost of maintenance, the case can only be dealt with on the plea of 'neglect.' This is a hard word, and has occasioned much grief and sorrow. In one sense he (or she) is neglected—he is not receiving the care, training, and control for which his condition calls—but his mother is giving him all the attention possible for a working woman to give and naturally resents having to plead 'neglect.' The addition of the words 'not under proper care and control' would meet the case."

But—and this is important—that devoted mother may not obtain the benefit she desires for her child unless and until she consents that he (or she) is first subjected to, what many mothers would consider, the indignity of certification. In other words, and to put it crudely: no certification, no benefit.

But why? Is not the modern trend in dealing with mental conditions to avoid certification, or, in any case, to delay it to a date as far off as possible? Did not the recent Royal Commission recommend that certification should be resorted to only as a last measure, and in the most extreme cases? That was for "lunatics"; but if for lunatics, why not for the feeble-minded? Certification certainly is a protection for the neglected, the abandoned, and the cruelly treated; it is an excellent means of compelling the unwilling; but that the child of the devoted and

[1] *Times*, January 22nd, 1927.

intelligent parent, only too anxious for its welfare, shall be similarly dealt with, that that child shall not be trained unless it is first certified, is this desirable? What is wrong with the principle of the *aided* "voluntary boarder"? If this principle is considered to be of definite value in dealing with the insane, why should it not prove to be of equal, or greater, merit in training the feeble-minded?—I am, etc.,

Epsom, Feb. 23rd. H. FREIZE STEPHENS.

WIRELESS CALLS FOR MEDICAL HELP AT SEA.

SIR,—In the BRITISH MEDICAL JOURNAL of February 12th (p. 307) Dr. F. F. Bond calls attention to the fact that there exists no method of codification of calls for medical help at sea. A practical way out of the difficulty lies in the supplying of every wireless-carrying vessel and lighthouse with printed forms worded as below.

Case Report Form.

1. Report No. (A, B, C, etc.).
2. Patient No. (1, 2, 3, etc.).
3. Date and time of sending (or receiving) message.
4. Rating (or position, occupation, etc.) of patient.
5. Age of patient.
6. Sex.
7. Type.
8. Habits (if normal signal "Nor.").
9. Time of onset of illness, and date.
10. Onset sudden or gradual? (signal "S" or "G").
11. Complaining of—(if pain signal "P," if unconscious state most obvious symptoms).
12. Previous health (if healthy signal "H," if previously ill recently state what illness, if unknown signal "U").
13. If previously in tropics (signal "Y" or "N" for "Yes" or "No").
14. Pulse rate per minute.
15. Respiration rate per minute.
16. Temperature.
17. Shivering?
18. Vomiting (if contents unusual, state).
19. Bowels (if open signal "O"; if not open in past eighteen hours signal "C"; if diarrhœa signal "D").
20. Urine passed (if unusual character, state).
21. Cough (if unusual character, state).
22. Any unusual swelling (if so, position).
23. Any skin eruption?
24. Exact site of pain (e.g., right lower abdomen, left upper abdomen, back of chest, etc.).
25. Any known cause for condition (if unknown signal "C. U.").
26. Treatment already given.
27. Further information or comment.
28. Sender.
29. Location.

Reply from medical officer.....

Time and date of receiving (or sending) reply.....

Messages relating to sickness or accident on board could then be sent out, and received, with reference to one of these forms—the number of each question on the form preceding, in the message, the answer to that question. Thus a case of acute appendicitis in a seaman might be reported in this way:

"1, A. 2, 1. 3, 11.2 p.m., 4th. 4, AB. 5, 35. 6, M. 7, Robust. 8, Nor. 9, 4 p.m., 4th. 10, S. 11, P. abdomen. 12, H. 13, Y. 14, 100. 15, 20. 16, 100 point 6. 17, N. 18, Y. 19, O. 20, Y. 21, N. 22, N. 23, N. 24, R. L. abd., severe. 25, N. 26, Poultices, Epsom. 27, Appears v. ill, advice *re* treatment required; if thought necessary, please send surgeon. 28, Captain, SS ——. 29, (Position)."

The printed form would thus act as a key to the message and as a permanent record. A system such as this would, I think, provide a ship surgeon with sufficiently exact and sufficiently full information about any distant case upon which his advice might be sought. The foreign language difficulty could be overcome by the use of esperanto.—I am, etc.,

VERNON NEWTON, M.R.C.S.,
Corps Surgeon (St. John Ambulance Brigade), Bridgend and District.

February 13th.

THROMBO-ANGIITIS OBLITERANS.

SIR,—We have had at the London Jewish Hospital during the last two years five cases (all Jews) of thrombo-angiitis obliterans and senile gangrene, and in none have we had to resort to high or even low amputation. In all of them we performed Leriche's operation (periarterial sympathectomy), and followed it up with various therapeutic measures, aiming at the encouragement of the capillary circulation, which is supposed to be in a healthy state.

Two of the patients have done very well and returned to active life; one man had to be readmitted for removal of gangrenous toes, and so far he has not responded to any treatment, and it is to be feared more radical measures will have to be taken; the fourth had improved considerably after the operation, but had a recurrence of pain, and committed suicide; the fifth could not be traced.

It appears to me that Sir William Wheeler's condemnation of Leriche's operation (February 5th, p. 226) is rather too harsh. Most surgeons will agree that the operation has the striking and immediate effect of relieving pain, though doubt may be expressed by some as to how far it inhibits the forward march of the gangrene. If Leriche's operation is performed in the early stages, before gangrene is definitely established, the prognosis is much better; it is of doubtful benefit in late cases.

Once amputation is decided on, I think low amputation should be resorted to. A Russian Jew, 55 years of age, had both his legs amputated about twenty-five years ago—one by the late Professor Israel of Berlin above the knee, and the other by Sir Berkeley Moynihan below the knee. The patient never had any more trouble since the operation, and leads a very effective business life. Intermittently he has pain and cyanosis in his fingers, but he manages to keep these attacks down to an inconsiderable minimum by frequently resorting to hot-air baths, radiant heat, etc.

May I add that one can hardly ascribe the cause of the disease to cigarette smoking? While it is true that in the past Jewish women abstained from tobacco, they hardly do so now. The advancement of civilization has penetrated the East End, and Jewish women help now considerably to the paying of the huge dividends by the tobacco companies. Besides, two patients of our series were mild smokers.—I am, etc.,

London, W.1, Feb. 26th. M. SOURASKY.

MIGRAINE.

SIR,—With reference to Dr. C. P. Symonds's remarks on migraine, at the Royal Society of Medicine on February 26th (p. 376), the following case seems to be worthy of record. A married woman, in the middle thirties, suffered from typical attacks of migraine on which various drugs had had little or no effect. A diet, as far as possible purin-free, was arranged for her, and the attacks became less frequent and less severe. She was in the habit of accompanying her husband when, as frequently, he made a journey from Manchester to Bristol, as she had friends in the latter place, and it was noted that she usually had an attack after the return journey. On cross-examination she confessed that she was tempted by and had taken soup when lunching on the train; soup was prohibited, with the result that subsequent journeys were taken without any return of migraine as a consequence.—I am, etc.,

London, Feb. 27th. O. H. WOODCOCK, M.D.

PUERPERAL SEPSIS.

SIR,—I have before me the report for 1925 of the East End Lying-in Home mentioned by Dr. Fairbairn in the BRITISH MEDICAL JOURNAL of January 8th (p. 50). It is amazing reading. Indoor, 1,087 mothers were delivered, with 2 cases of sepsis; outdoor, 1,092, with no sepsis. Since 1884, 18,647 in-patients have been delivered—sepsis, 3 cases; outdoor, 24,683—no sepsis.

Glasgow Maternity Hospital figures for 1925 are: Indoor, 2,897—sepsis 49; outdoor, 3,840—sepsis 43. At this rate, since 1884 there have been 2,009 cases of sepsis in the maternity against 3 in London, and 1,720 in the outdoor, against none in this London home. The East End Lying-in Home, I understand, is run by general practitioners and nurses.

Professor Munro Kerr, I believe, never did general practitioner work, but has adorned the Glasgow Maternity Hospital all his medical life. He uses his great position, not to deplore this sepsis, for which he is jointly responsible, but to condemn that of the general practitioner,

which is no worse than his own. What does he think of the London home?

Might I ask Dr. Fairbairn if he ever worked as a general practitioner? If so, how long? and what was his sepsis rate? It is worse than useless being a critic if one is not also an example.—I am, etc.,

Dennistoun, Feb. 17th. JAMES COOK, M.B., Ch.B.

Obituary.

EDWARD SWAN SIMPSON, *M.C.*, M.D.,

Medical Superintendent, East Riding Mental Hospital.

WE regret to record the death of Dr. E. S. Simpson, medical superintendent of the East Riding Mental Hospital, which occurred at Beverley, after a short illness, on February 2nd.

He was born in Edinburgh in 1882, and was educated at George Watson's School. He received his medical education in the University of Edinburgh; he graduated M.B., Ch.B. in 1905, and proceeded M.D. in 1910. He held also the certificate in tropical medicine of that university. In 1905 he was appointed assistant medical officer to the East Riding Mental Hospital, and in 1919 succeeded Dr. Archdale as superintendent. He served the hospital for twenty-two years—exactly half his life.

He was a member of the British Medical Association, and an active member of the council of the Medico-Psychological Association. He was an able psychologist, a sound general physician, a man of considerable mental culture, and a good administrator; his hospital was very efficiently conducted.

During the war he served overseas with the 1st/3rd Northumbrian Field Ambulance, and was then posted, at his own request, to the 4th Green Howards as regimental medical officer. He was a gallant and efficient officer, and was awarded the Military Cross for his service during the great retreat in the spring of 1918.

His was a very full life. He was at once a scholar and a sportsman; for many years he was secretary to the Beverley and East Riding Golf Club, and was captain in 1926; he was a keen fisherman, a noted raconteur, a hospitable host, and a welcome guest wherever he went. He was an ardent Freemason, and three weeks before his death was installed Worshipful Master of the Constitution Lodge of Beverley. Simpson was beloved by all who came in contact with him; his geniality endeared him to his friends, and his unfailing kindness and consideration for his staff and his patients will not be soon forgotten. His loss is deplored, and great sympathy is felt for his widow at his early death.

A service was held in the hospital chapel on February 5th which was largely attended by his friends and colleagues, and his remains were interred at Edinburgh on February 6th.

After a long and trying illness Dr. JOHN ROBERT MITCHELL died on February 9th at Chester-le-Street, where he was born in 1875. He received his medical education at the University of Durham College of Medicine, Newcastle-on-Tyne, and graduated M.B.Durh. in 1900. After preliminary experience with older practitioners, he settled, in 1902, in the East End of Newcastle-on-Tyne, where he built up a large general practice, and held also the position of Poor Law medical officer and public vaccinator for the parish of Walker. Painstaking and conscientious in the performance of his duties, he was highly respected and loved by all who knew him—by his colleagues for his probity and the soundness of his views, and by his patients, particularly the poorer ones, for his unfailing kindness and the unremitting care which he devoted to all, without distinction. Dr. Mitchell was a man of very strong opinions, which he never hesitated to voice when necessary. In spite of the numerous calls of a large practice in an industrial area he kept himself well abreast of current medical thought and teaching, and for some years was one of the assistant physicians to the Newcastle-on-Tyne Hospital for Diseases of the Skin. During the war Dr. Mitchell joined the staff of the Northumberland War Hospital as an assistant surgeon; early in 1916 he was accepted for general service, with a commission in the R.A.M.C. The unsettled conditions of army life undermined his constitution, and in April, 1918, he was invalided out. He retired to Chester-le-Street, and never recovered sufficiently to resume practice, although he did occasional duty at the Newcastle-on-Tyne Skin Hospital. His patience, cheerfulness, and fortitude throughout his illness were a constant source of admiration to his friends and acquaintances. Dr. Mitchell was a member of the British Medical Association, the Newcastle-on-Tyne Clinical Society, and the Heaton Medical Society. He was buried in Chester-le-Street Cemetery on February 12th, and the funeral was attended by a large number of his friends from Northumberland, Durham, and Yorkshire.

Dr. GEORGE EDWIN PEARCEY, who died at Sunderland on January 6th, was born in 1859. He was the son of James Pearcey of Southwick, and was educated at the University of Durham, graduating M.B., B.S. in 1894. After a term as house-surgeon at the Newcastle Infirmary he went into general practice in Sunderland. He was for many years physician to the Sunderland Provident Dispensary, and also in an honorary capacity to St. Joseph's Home for aged poor. Dr. Pearcey was a keen member of the British Medical Association, and had served on the executive committee of the Sunderland Division. He was also an original and much esteemed member of the Sunderland West End Medical Society. During the war he was commandant of the St. Gabriel's Voluntary Hospital. He was warden of St. Peter's Church, Bishopwearmouth, a representative on the Ruridecanal Conference, and a member of the National Assembly of the Church of England as a representative of the Durham Diocese. Dr. Pearcey's loss will be much felt by his brother practitioners, to whom he was a most loyal colleague. He married Anne, daughter of Joseph Williams, shipbuilder, of Monkwearmouth, and is survived by three daughters.

The Services.

MEDICAL DIRECTOR-GENERAL, R.N.

SURGEON REAR-ADMIRAL ARTHUR GASKELL, C.B., O.B.E., F.R.C.S.Eng., D.P.H., has been appointed to succeed Surgeon Vice-Admiral Sir Joseph Chambers, K.C.B., C.M.G., M.D., F.R.C.P.I., K.H.P., as Director-General of the Medical Department of the Navy, to date July 1st, 1927.

Admiral Gaskell was born in 1871, and after studying medicine at University College Hospital, London, joined the Royal Navy in 1893. He was promoted staff surgeon in 1902, fleet surgeon in 1906, surgeon commander in 1920, and three years later surgeon rear-admiral on being appointed to the charge of R.N. Hospital, Plymouth. He has held many appointments afloat and ashore, and has published various papers connected with the Royal Naval Medical Service. For his services during the war he was created C.B. in 1916, and O.B.E. in 1919.

ROYAL ARMY MEDICAL CORPS.

Temporary Commissions for Home Service.

THE War Office announces that there are a number of vacancies in the Royal Army Medical Corps for temporary officers for service at home stations.

Candidates for these commissions must be registered medical practitioners, under 55 years of age, and they will be required to give an undertaking to serve for at least six months. After that period appointments will be terminable by a month's notice on either side. But if they so desire, accepted candidates who fulfil the necessary conditions as to age, etc., will be considered for permanent commissions. Pay for those who have not previously served in the Royal Army Medical Corps will be at the rate of £600 per annum; but the initial rate for those who have served for not less than twelve months as officers of the corps will be £650 per annum. In each case there will be an outfit allowance up to £40. Applications should be sent to the Under Secretary of State, the War Office, Whitehall, S.W.1, from whom full particulars may be obtained.

VOLUNTEER DECORATION

THE Volunteer Officers' Decoration has been awarded to Surgeon Commander H. J. W. Brennand, R.N.V.R.

Medical Notes in Parliament.

[FROM OUR PARLIAMENTARY CORRESPONDENT.]

THE House of Commons on Monday discussed the Government's delay in ratifying the Washington Convention on hours of labour. On Tuesday the Poor Law Emergency Provisions (Scotland) Bill was read a third time, and the House discussed the appeal from the "necessitous" areas for aid in relief of rates. The other business of the week was not of direct medical interest. In the House of Lords the Committee stage of the Diseases of Animals Bill was set down for Thursday.

On Monday Dr. Haden Guest, the member for Southwark, North, informed Mr. Ramsay MacDonald that he did not propose to remain a member of the Parliamentary Labour Party. Next day that party called upon Dr. Haden Guest to vacate his seat in Parliament without delay. Dr. Haden Guest has been an active member of the Parliamentary Medical Committee, and was one of its officers while the Labour Government was in power.

The Parliamentary Medical Committee met at the House of Commons on February 23rd, but decided to postpone the election of officers for 1927. Dr. Watts has secured the right to draw attention to vaccination and small-pox when the House goes into Committee on the Civil Service Estimates about the end of May; the Medical Committee is considering whether all members of Parliament should previously be invited to an open meeting to hear a statement of the medical view. The Medical Committee also considered the Dogs Bill, which is down for second reading on April 29th, and it is probable that there will be a deputation of medical members of Parliament to the Government on the subject. The Committee was of opinion that when the Party Whips are nominating members to serve on committees for bills which raise medical questions they should include some medical members, and representations will be made to this effect.

Lunacy Administration.

In the House of Lords, on February 24th, Earl Russell called attention to the report of the Royal Commission on Lunacy and Mental Disorder, and asked whether the Government proposed to introduce legislation. It was, he said, important that the idea of lunatics being violent and dangerous people for whom the primary treatment was detention should be removed from the minds of the public, and that from the minds of the patients should be removed the impression that they were being wrongfully detained and wrongfully treated. In the quarter of a century since he was engaged in inspecting asylums the old apparatus of locks, bars, and prison-like surroundings had very largely gone. He had in mind a private institution where 30 per cent. of the patients were allowed to go freely into the town on parole. He called the attention of the House to the misunderstood class of paranoiacs—persons subject to a fixed delusion, but who otherwise might be reasonable, clean, and intelligent. Women not infrequently had the delusion that some distinguished public man was their lover or husband and was being wrongfully kept from them; when that did not lead to action, it was not for the law to interfere, but when molestation followed the woman had to be restrained. Earl Russell detailed the case of a man who, having the delusion that he had been wrongfully convicted for stealing meat from a stores, broke windows there whenever released from the asylum, though when detained he showed no signs of insanity or delusion. In such a case visitors to the asylum might report that a sane person was detained. The Royal Commission on Lunacy had made special inquiries into all allegations of wrongful detention, but had not traced in the asylums of this country a single case where a man was wrongfully detained. Nor did it come across a case in which it could say that a man had been wrongly certified, though there were cases of a process which ought to be very serious and responsible being a little too much of a routine. A curious thing about certification and the early stages of mental disease was that the most obstreperous and obviously insane of the persons to be certified were generally those soonest cured and discharged. The well behaved lunatic with one obsession was the man for whom hope was generally absent; his fixed delusion was associated with an idea of persecution which grew till he developed homicidal tendencies towards the person he believed to be the persecutor. The Royal Commission was much struck by the enormous number of mental cases which it was possible to discharge, and had considered whether some provisional treatment could not be provided without the stigma of certification, which was apt to cling for life, because the public thought "once a madman, always a madman." If there were to be a provisional stage, should it be on the doctor's certificate alone, or on the doctor's certificate backed by an order of the justices? As the violent cases gave the most hope for cure, restraint would be necessary during this provisional treatment. An allied question was that of classification in the early stages. He believed there was some truth in the allegation that in the receiving ward of a workhouse for the mentally defective every class of mental disorder was herded together. Doctors were not so sure as laymen that such association had the worst possible effect, it being minimized by the fact that many mental cases lived in a world of their own. Still such association was extremely undesirable, as the sights and sounds must distress people suffering from less advanced stages of mental disease. Closer classification would mean more medical officers and attendants, smaller wards, and, in many cases new buildings, involving expenditure of public money for which at present it was difficult to ask. But such expenditure would give a return in the smaller number of lunatics to be maintained. In most of the rate-aided asylums an increase was desirable in the number of medical officers and in that of attendants. Wards were too large and individual attention too difficult. Watchfulness, care, and individual observation of those for whom there was any hope of preparing for discharge was the only way of getting maximum discharges from asylums. The chief pride of the superintendent of an asylum was the number of inmates he managed to restore to their friends. The advances made in the last twenty-five years had not been due to the Legislature nor to the county councils, but primarily to the initiative of the medical men themselves. No drug or specific treatment would cure mental disease. The only course was to do what doctors now recognized that they did with physical diseases—put the patient into the best condition to fight the disease himself. He hoped that in any legislation the Ministry of Health would consider whether, in provisional treatment, it was necessary to invoke the justices. This was done because of the old and utterly fallacious idea that the doctor, as an enemy of the human race, was trying to put an innocent man into prison. The justice could only satisfy himself by conversation with the doctor or in a few cases by seeing the patient. Such safeguards were not needed in ninety-nine cases out of a hundred. The expectation Parliament held in 1890 that licensed houses for the reception of lunatics would die out had not been fulfilled. Parliament should decide whether it was fit that licensed houses should exist. If they should, then there should be free trade in them, one effect of which would be a better geographical distribution. If the licensed houses were to be abolished, what accommodation should be provided for persons who could afford to make their choice of institution? Standardized accommodation would be resented by that class. The Board of Control was understaffed. Even if the Government could do nothing else with regard to the report of the Royal Commission, the number of the Board should be increased. Earl Russell, in concluding, suggested that the postponement of the Poor Law Reform Bill gave an opportunity to present a bill this session on the reform of the Lunacy Laws, if only for first reading and public study.

Lord Sandhurst, one of the Lord Chancellor's visitors, said there was no controversy over the necessity of early treatment. The law should be reformed so that voluntary boarders could be received into rate-aided institutions. The Mental After-Care Association did invaluable work, but the care of patients leaving asylums should not be left to, and could not be adequately performed by, any charitable institution. A difficulty in carrying out the present law arose in the natural hesitation of the medical profession in certifying patients. Recent cases had alarmed them, and they felt they were not adequately protected against subsequent litigation. There were clear cases where the interest of the patient and the public made supervision desirable, but where it was difficult to find medical men who would certify. He doubted whether the safeguard proposed by the Royal Commission would suffice to inspire confidence in the medical profession, and suggested that damages recoverable in an action for wrongful certification should be limited to one month, at the end of which a special report had to be made to the Board of Control, limiting the period during which detention could be attributed to the certificate. The whole matter was ripe for legislation, and it would be an advantage if reform of the Poor Law and that of the Lunacy Law were considered together.

Viscount Gage, replying for the Government, said that legislation would give rise to controversy on grounds quite apart from the medical and scientific aspects, and the Harnett case had shown the necessity of avoiding obscurities in the new proposals. The Royal Commission had not made unanimous proposals about licensed houses. The report had only been presented last July, and as close consideration of scientific, legal, financial, and administrative aspects was required, the Government must claim more time for investigation. Until the Government's proposals for the reform of the Poor Law were crystallized discussion of the administrative side of the Lunacy Commission's report would be almost useless. The Government regarded the report as most valuable.

Lord Haldane said it would be much better if the Government proceeded with the drafting of the bill and introduced it into the House of Lords this session for public information. The Earl of Balfour promised that the Minister of Health would consider the speech of Earl Russell, which would be particularly valuable in altering the attitude of the uninstructed public.

BILLS.

Mental Deficiency Bill.

Mr. Chamberlain informed Sir John Marriott that the Government did not propose to reintroduce the Mental Deficiency Bill this session. He understood Mr. Crompton Wood's bill would incorporate some provisions from the Government bill of last session.

The Lead Paint Bill.

In the House of Lords, on February 23rd, Lord Arnold opened a debate on the resignation of Sir Thomas Legge from the position of Senior Medical Inspector of Factories and to the Draft Regulations under the Lead Paint (Protection against Poisoning) Act. He reminded the House that in 1921 the representatives of thirty countries, including Great Britain, agreed to a draft convention whereby the use of lead paint for interior work was to be prohibited after 1927. The Lead Paint Act passed last year merely enacted that the use of lead paint for interior work should be regulated. Sir Thomas Legge, as one of the delegates of the

British Government, voted for the draft convention in 1921, and, looking upon what had been done by the Government as a breach of honour, he had resigned his position. For a civil servant to resign on a point of disagreement with the Government was unusual and serious. The vested interest of the white lead manufacturers had caused the Government to break faith. Sir Montagu Barlow had described the convention of 1921 as a settlement. Lord Arnold said that the harm done by lead paint in interior work mainly arose when old paint was rubbed down and particles of it got into the system through the lungs. Waterproof sandpaper was supposed to meet the danger, but so many things had to be done if waterproof sandpaper was to be a preventive that in practice all these things would scarcely ever be done. The Home Secretary had said in the House of Commons that Sir Thomas Legge did not wish to be concerned in the administration of the Lead Paint Act. That was not so. His main reason was that he could not recede from the position he had taken up in Geneva. Lord Arnold traversed the assertion of the Home Office that the draft regulations had been approved by various bodies, including the Operative Painters' Society. The regulations were nearly all drafted to apply to external painting, and were approved by the various bodies in 1922, when they understood that the Geneva Convention was to be ratified. The Government ought to make plain to the white lead manufacturers that it was to their interest to begin as soon as possible the manufacture of zinc paint and other substitutes for lead paint.

Lord Burnham said that, as chairman of the Drafting Committee, he was in part responsible for the convention. He regretted that the Government had been unable to recommend Parliament to ratify it. The contest at Geneva had not been between humanity and callousness, but between lead-producing and zinc-producing countries. It was quite open for any Government to recommend or not to recommend the adoption of a draft convention. He believed that the Act passed last session would have some effect for good, but that after it had been tried a draft convention would again have to be proposed for the consideration of Parliament. To try to make partisan capital out of the resignation of Sir Thomas Legge was monstrous: nobody who knew his work could feel anything but the highest respect for him.

Lord Haldane condemned the attitude of the Government. Lord Desborough, replying for the Home Office, joined in expressing the appreciation of that department, and of employers and employed, in the inestimable services of Sir Thomas Legge over a long period. His resignation could not have been postponed, but it was none the less to be regretted. There had been conferences with employers and employed about the regulations, and the Home Office was going carefully into the question of protection by, for instance, prohibiting the use of any lead paint in the form of spray. He thought the regulations would shortly be issued. After further discussion, Lord Arnold withdrew his motion for papers on the subject.

Research into Diseases of Animals.

In moving the second reading of the Diseases of Animals Bill in the House of Lords, on February 24th, Lord Bledisloe said one clause in the bill was to permit the use of an immunizing agent on contact animals in the event of an outbreak of rinderpest. This country had not had any such outbreak since 1887, but in South Africa, Japan, and Palestine an immunizing agent had proved effective. The work of the veterinary staff of the Ministry of Agriculture had achieved results of great value against foot-and-mouth disease. In 1923, the peak year, 1,929 outbreaks of that disease in this country involved a public expenditure of £2,205,000. In 1926 the number had shrunk to 204 outbreaks, with an expenditure of £1,389,000. This year there had been 19 outbreaks. The tracing of the Lanarkshire outbreak of last May to pig carcasses from the Continent had established a previously unknown source of infection. Meanwhile, outbreaks on the Continent had increased in number. The Foot-and-Mouth Disease Research Committee, over which Professor Martin now presided, had established that the claim of Drs. Frosch and Dahmen in 1924 to have isolated the micro-organism of the disease was not well founded. So far, the Committee had found it impossible to cultivate the virus and prepare an immunizing serum. They had experimented on the susceptibility of the virus to disinfectants, including vinegar, but by far their most important discovery was the vitality of the germ of the disease. In animal flesh the virus became inert within twenty-four hours; in the blood it remained active for thirty to forty days; and in bone marrow for seventy-six days after slaughter. An Order was about to be issued compelling the boiling of slaughterhouse offal before it was used for the feeding of pigs. The bill was read a second time.

Hours of Labour.

On February 28th the House of Commons discussed in Committee a vote of £11,653,564 for the Ministry of Labour. Mr. Hayday moved a reduction of £100, and called attention to the failure of the Government to ratify the Washington (Hours) Convention. Sir A. Steel-Maitland (Minister of Labour) said that the matter was under the consideration of the cabinet. Dr. Vernon Davies said he was a confirmed and convinced believer in the necessity, in the interests of efficiency, for a forty-eight hours' week. He suggested that the Minister might ratify the Convention provisionally, and that if, after a certain time, other nations did not ratify, Great Britain should repeal it. The Government front bench showed a lack of understanding of industrial psychology, and the very fact of ratifying the agreement would cause such a feeling of thankfulness and relief among the working people that there would be peace in industry. The amendment was rejected.

Vaccination and Small-pox.—In a reply to Mr. Groves, Mr. Chamberlain said severe reactions following vaccination had been reported at Sheffield and other towns. A medical officer of the Ministry of Health recently made inquiries into the results of vaccination at Sheffield on behalf of the Vaccination Committee which was now sitting. In another reply to Mr. Groves, Mr. Chamberlain said 10,158 cases of small-pox were notified in England and Wales during 1926; this total was subject to revision. In the year 19 deaths were registered in respect of which small-pox appeared on the certificates as the cause or one of the causes of death. The words "vaccination" or "vaccinia" appeared upon four medical certificates, but in three was subsequently withdrawn by the certifying practitioner.

Epidemic Diseases in Sheffield.—In figures supplied to Mr. A. V. Alexander the Ministry of Health shows that in Sheffield 58 cases of small-pox were notified during December, 297 during January, and 124 from February 1st to 19th. No deaths were notified. From November 28th to January 19th in Sheffield 398 cases of scarlet fever were registered with 5 deaths, and 296 of diphtheria with 13 deaths. No deaths were registered from measles.

Scarlet Fever.—Mr. Chamberlain told Mr. Bennett that the serum treatment of scarlet fever and the Schick test and von Behring's method of immunization against diphtheria were being used increasingly throughout the country and with encouraging results. He was advised that the serum treatment of scarlet fever was of value particularly in severe cases and in preventing complications. A fair number of local authorities now provided active immunization against diphtheria for those who wished to avail themselves of it.

Medical Examination of Boys in Coal Mines.—Dr. Vernon Davies asked whether boys were allowed to work underground in coal mines without previous medical examination, and whether the Ministry of Labour would take steps to see that they underwent a medical examination similar to that which children underwent under the Factory Acts. Mr. A. M. Samuel, replying for the Minister, undertook that the suggestion would be put before the right department.

Nurses' Salaries.—The Minister of Health, answering Mr. G. Hurst, said that the salaries paid to nurses in some of the public health services were not commensurate with the duties performed. In cases which came under his jurisdiction representations were made to the local authorities concerned. An association of nurses was consulted before the issue of the regulations of February, 1925, on the position of health visitors employed by local authorities. It was not at present proposed to revise these regulations.

Pension Procedure.—Major Tryon told Dr. Drummond Shiels that the duty of the Deputy Commissioner of Medical Services was to prescribe whatever treatment he considered necessary. When attention from a general medical practitioner was all that was required, the pensioner was advised to consult his panel doctor. Major Tryon did not feel justified in requiring, as Dr. Shiels suggested, the hospital treatment of all cases of deterioration. A certificate from the pensioner's own doctor was taken in support of a need claim, but if this was insufficient to enable the Ministry of Pensions to decide the claim, an examination was made by a medical officer of the Ministry.

Indian Medical Service.—On February 28th Earl Winterton (Under Secretary for India), replying to Mr. Pethick-Lawrence, who asked if a decision had been reached about granting passage concessions to Indian officers who entered the Indian Medical Service by competitive examination in London, said the Secretary for India expected that details of the scheme recently sanctioned would be announced shortly.

Notes in Brief.

From the armistice till March, 1927, £647,000,000 has been spent by Great Britain on war pensions, including medical treatment but excluding administration.

The Minister of Health is considering representations regarding the admission of road casualties into Poor Law institutions.

The Home Secretary does not contemplate amending legislation relating to compensation for silicosis.

On the ground that traffic considerations must come first, the Home Secretary maintains the prohibition against the processions organized by the West London Amalgamated Hospital Society.

The cost of medical inspection and treatment of children attending public elementary schools under the London County Council in 1926-27 is estimated at £201,555.

Fourteen schools in the Wigan area have been placed on the "black list," and the Minister of Education has received proposals for improving eleven of them. A report by Dr. Henry Whitehead has condemned the heating, ventilation, and sanitation of the majority of Wigan schools.

The Scottish Board of Health is communicating with the Parish Council of Uig about a rearrangement of medical practices in the parish.

A bill to prohibit the building over of London squares has been introduced by Mr. Scurr and read a first time.

Mr. Chamberlain is not aware that insurance practitioners generally charge fees to patients for dental services, though isolated cases may occur. Complaints should be referred to the local Insurance Committee.

On January 1st 116,748 persons certified under the Lunacy Acts were resident in England and Wales, and also 22,739 mental defectives in homes or under guardianship.

Universities and Colleges.

UNIVERSITY OF OXFORD.

AT a congregation held on February 19th the following medical degrees were conferred:

D.M.—V. S. Hodson.
B.M.—D. A. Robertson, C. S. Broadbent, M. D. Bower.

UNIVERSITY OF LONDON.

THE SENATE.

The Coming Election.

SIR WILLIAM COLLINS has informed the London County Council that he does not wish to be reappointed its representative on the Senate when his term of office expires next May. Sir William Collins has explained his reason in the following statement to the Education Department of the L.C.C.:

"The University of London Act, 1926, which, by appointing commissioners to effect, during the current year, the reconstitution of the University in general accordance with the report of the recent Departmental Committee, has, as you are aware, altered the relation of the L.C.C. to the University. The L.C.C. is no longer to be represented on the Senate, but on a Finance Council, and the Senate is no longer to be, as it has always hitherto been, the supreme governing and executive authority of the University, and is to be otherwise modified in its constitution and powers. This being the case, the L.C.C. may well desire to consider the advisability of finding a new representative for this entirely new position. As you may have gathered from the very pleasant interview which I had with your Higher Education Committee last summer, I view with mistrust and misgiving some of the changes which are about to be imposed upon the University. I do not desire to seek nomination to the new position."

Sir William Collins has represented the London County Council on the Senate for twenty-seven years, and for seven years before that was a representative elected by Convocation. It is reported that Lord Justice Atkin and Sir Robert McCall, K.C., will also cease to be members of the Senate.

At the forthcoming election of a medical member of Convocation to a seat on the Senate, Mr. W. McAdam Eccles, M.S., M.B.Lond., F.R.C.S.Eng., has consented to stand. He has, we are informed, strong support, and his long experience as a member of the Council of the Royal College of Surgeons of England, and as a member of the Council of the British Medical Association, should make him a suitable candidate. The vacancy is created by the expiration of the term of office of Dr. R. A. Young, who does not intend to offer himself for re-election. Members of Convocation must vote before or on Tuesday, May 10th.

Matriculation.

At the January matriculation examination 147 candidates passed in the first division and 779 in the second division; 63 took the supplementary certificate for Latin.

Appointments.

Professor G. Elliot Smith has been appointed the representative in respect of University College at the celebration in London of the centenary of the birth of Lord Lister on April 5th. Sir William J. R. Simpson will represent the University at the thirty-eighth congress of the Royal Sanitary Institute at Hastings in July, and Sir Holburt Waring has been appointed one of the representatives at the second International Congress of Byzantine Studies, to take place in Belgrade in April.

Sir StClair Thomson has been appointed a Fellow of King's College.

Two lectures on the history of medicine, illustrated by lantern slides, will be given at University College Hospital Medical School by Dr. Charles Singer, on March 11th and 18th, at 4.15 p.m.; they will deal respectively with the hygienic idea in world history and the history of yellow fever.

The Cancer Hospital (Free), Fulham Road, has been admitted as a school of the University under Statute 74 for three years from March 1st, 1927.

UNIVERSITY OF ABERDEEN.

AT a meeting of the Senatus on February 22nd it was agreed to confer honorary degree of LL.D. upon the following members of the medical profession on March 23rd: Professor Matthew Hay, M.D., Sir Frederick Gowland Hopkins, D.Sc., F.R.S., F.R.C.P., Sir William Milligan, M.D., and Mr. Charles Howard Usher, F.R.C.S.

UNIVERSITY OF MANCHESTER.

THE resignation of Professor W. W. C. Topley from the chair of bacteriology and the directorship of the Public Health Laboratory has been accepted by the Council as from September next, when Professor Topley will take up his duties as professor of bacteriology and immunology in the new London School of Hygiene and Tropical Medicine.

The Council has expressed its congratulations to Professor J. S. B. Stopford, professor of anatomy and dean of the Medical School, Professor T. Graham Brown, formerly lecturer in experimental physiology in the University, and to Dr. J. W. Mellor, a graduate of the University, on their nomination for election as Fellows of the Royal Society.

SOCIETY OF APOTHECARIES OF LONDON.

THE following candidates have passed in the subjects indicated:

SURGERY.—I. G. Briggs, J. D. Evans, L. J. Lawrie, A. W. Marsden, J. H. Mulvany, W. D. Neill, L. W. Rose, R. S. S. Smith S. le R. Switzer, H. N. Walker.

MEDICINE.—L. Ashkenza, B. Best, I. G. Briggs, J. de Rosa, J. A. Fernandes, S. Jenkinson, R. Kahn, J. H. Mulvany, H. Rundstrom, H. N. Walker.

FORENSIC MEDICINE.—P. V. Bamford, I. G. Briggs, J. de Rosa, R. Kahn, J. H. Mulvany, S. Wray.

MIDWIFERY.—I. G. Briggs, J. D. Evans, K. E. Gallagher, R. Kahn, J. H. Mulvany, S. Slotar, H. N. Walker, R. W. Wood, S. Wray.

The diploma of the Society has been granted to Messrs. B. Best, I. G. Briggs, J. H. Mulvany, L. W. Rose, H. Rundstrom, R. S. S. Smith, S. Wray.

Medico-Legal.

AN OSTEOPATH'S CLAIM FOR FEES.

UNDER the Medical Act, 1858, Section 32, "no person shall be entitled to recover any charge in any court of law for any medical or surgical advice, attendance, or for the performance of any operation, or for any medicine which he shall have both prescribed and supplied, unless he shall prove upon the trial that he is registered under this Act." Notwithstanding the clear terms of this section, an osteopath sought last week to recover £30 9s. from a boxing referee and timber merchant, for professional services as osteopath to the defendant's wife. The case was heard in the Bloomsbury County Court by Deputy Judge Stoker, and was reported in the *Times* of February 25th.

According to the plaintiff, the defendant's wife came to him on March 10th last, stating that she desired osteopathic treatment. He observed that she was suffering from nervous debility and facial neuralgia, and found that one of her legs was longer than the other and contributed to the debility. His fees were 3 guineas for each consultation and 2 guineas for each subsequent visit. He obtained his osteopathic degree in America; he made no claim to be legally recognized in this country.

For the defendant it was argued that there had been improper treatment, and that the plaintiff was not qualified.

The Deputy Judge expressed the view that the plaintiff was prevented by the Medical Act of 1858 from recovering payment for medical or surgical treatment. Upon the plaintiff interposing that he did not claim to be giving medical or surgical treatment, the Judge rejoined: "The question is whether you do so. You are not registered under the Medical Act, which states that you must have a special qualification in order to entitle you to recover fees." He thought the plaintiff's case failed, and that he was precluded under the Act from recovering his fees in a court of law.

Judgement was accordingly entered for the defendant, with costs, with leave to appeal if desired.

Medical News.

IT is announced that the Canton Government has now taken over the John Kerr Hospital for the Insane from the charge of Dr. Selden, who has been working in Canton for thirty years. We referred last week (p. 392) to the recent difficulties experienced by this institution in carrying on its very important work.

PROFESSOR VITTORIO PUTTI, director of the Rizzoli Orthopaedic Institute, Bologna, will deliver the Lady Jones lecture in the medical school of the University of Liverpool on Thursday, March 10th, at 4 p.m. The subject of the lecture is "New conceptions in the pathogenesis and treatment of sciatica."

THE second of two Chadwick public lectures on rheumatism, its causes and prevention, will be given by Dr. Carey F. Coombs, physician to the General Hospital, in the Barnes Hall, Royal Society of Medicine, 1, Wimpole Street, W., on Thursday, March 10th, at 5.15 p.m., with Sir James Crichton-Browne, M.D., F.R.S., in the chair.

THE annual meeting and conference of the British Hospitals Association will be held at Norwich on Thursday and Friday, June 23rd and 24th. The honorary secretary of the association is Mr. J. Courtney Buchanan, C.B.E., Stapley House, 33, Bloomsbury Square, W.C.1.

THE microscopy of the living eye will be the subject of a paper to be read to the Optical Society on Thursday next by Mr. Basil Graves, M.A., M.R.C.S. The meeting will be held at the Imperial College of Science, South Kensington, at 7.30 p.m. Messrs. Clement Clarke will show an ophthalmoscope attachment to the Fincham slit lamp and the Cambridge Scientific Instrument Company its photographic ophthalmoscope.

DR. KENNETH BRUCE ALLAN, senior medical officer, West Africa Medical Staff, Gambia, has been appointed a member of the Executive Council of the Gambia and an official member of the Legislative Council of that colony.

MR. JOCELYN SWAN will lecture for the Fellowship of Medicine on the suppression and retention of urine at the Medical Society, 11, Chandos Street, W., on March 10th, at 5 p.m. On March 8th Mr. Gabriel will give a demonstration in clinical surgery at St. Mark's Hospital, City Road, at 4.30 p.m. The lecture and demonstration are free to members of the medical profession. The Hospital for Consumption and Diseases of the Chest, Brompton, will hold an all-day course of demonstrations for one week, starting on March 7th. A special course in orthopaedics will be given at the Royal National Orthopaedic Hospital from March 21st to April 2nd, with a visit to the Brockley Hill Country Hospital. From March 14th to 26th the Chelsea Hospital for Women will hold a course in gynaecology. A course in general medicine and surgery, primarily intended for general practitioners, will be held at the London Temperance Hospital from March 21st to April 2nd in the late afternoons. At the Queen's Hospital for Children, Bethnal Green, there will be an all-day course in diseases of children from March 28th to April 9th. In the afternoons only, for two weeks, from March 28th the Royal Eye Hospital will give a series of demonstrations on the diagnosis and treatment of eye diseases. Copies of all syllabuses and of the *Post-Graduate Medical Journal* may be obtained from the Secretary of the Fellowship, 1, Wimpole Street, W.1.

A VACATION course in pediatrics will be held at the Hôpital des Enfants-Malades in Paris from April 20th to 30th, the fee being 200 francs. Recent researches and methods will be dealt with, including those relating to cerebro-spinal meningitis, scarlet fever, infantile asthma, the prevention of infantile tuberculosis, congenital syphilis, and the thyroid syndromes. Further details may be obtained from the Secretary of the Faculty of Medicine, 149, Rue de Sèvres, Paris (XV^e).

UNDER the auspices of the Society of Hydrology and Climatology of Nancy and the Vittel Society of Medicine a congress on the gouty diathesis will be held at Vittel on June 5th and 6th, over which Professor P. Carnot of Paris will preside. Further information may be obtained from M. Renard, Société générale des Eaux, Vittel, Vosges.

AT a council meeting of the Society of Members of the Royal College of Surgeons of England a resolution was passed unanimously deploring the great loss sustained by the death of Mr. C. Edward Wallis, M.R.C.S., L.D.S., and placing on record its appreciation of his untiring zeal and self-sacrificing service on behalf of the society and all the Members of the College.

THE Council of Epsom College is about to award a St. Anne's Home Scholarship of £52 a year to the orphan daughter of a medical man who had been in independent practice in England or Wales for not less than five years. Candidates must be fully 7 years of age and not over 12 years on May 1st next. The Council is also about to award a Henry Duncalfe Annuity of £30 a year to the unmarried daughter of a medical man. Candidates must not be under 50 years of age. Forms of application can be obtained from the Secretary, at the Office of the College, 49, Bedford Square, W.C.1, and must be returned not later than the morning of March 16th.

DR. R. A. MILLIGAN, who recently retired from the position of surgeon to the Northampton General Hospital after more than forty years' service, has been presented with a cheque for £453 and an album containing the names of the subscribers to the testimonial fund.

A BAS-RELIEF bronze bust has been placed in the main hall of Leeds General Infirmary as a memorial to the late Mr. Walter Thompson, for many years honorary surgeon to the institution.

THE Ministry of Health has published a report (No. 39) on the determination of benzoic acid in foodstuffs, which has been prepared by Dr. G. W. Monier-Williams. In addition to a review of the literature on the subject and discussion of the difficulties associated with the methods of analysis, various laboratory investigations are considered. The report, which is intended especially for public analysts and chemical advisers to industrial concerns, may be obtained from H.M. Stationery Office, or through any bookseller, price 1s. net.

THE Rockefeller Foundation has made a further grant of 75,000 dollars to the German Research Institute for Psychiatry at Munich, to which it contributed 250,000 dollars last year.

THE issue of *Hospitalstidende* for January 20th contains a memoir, by Dr. Carl Sonne, of the late Danish surgeon Professor Thorkild Rovsing, with a bibliography of his scientific writings.

THE Bureau of the Far East at Singapore reports that during the week ending January 22nd there were 33 cases of plague with 16 deaths, 66 cases of cholera with 65 deaths, and 306 cases of small-pox with 91 deaths.

FOR the purpose of binding in two parts the *Proceedings of the Royal Society of Medicine* for 1925–26 (vol. xix) there is now available a main title-page for each of the two sub-volumes; a special title-page and list of contents for the reports of general and joint discussions; a title-page and contents for the reports of each of the Sections, in case it is desired to bind these separately; and a general index. Binding cases may be obtained, post free, from Messrs. John Bale, Sons and Danielsson, Ltd., for the whole year's *Proceedings* in two parts 6s., and for separate Sections 3s., each. These publishers are also prepared to bind any single Section for 4s. 6d., or the whole *Proceedings* in two parts for 10s. 6d.

ON page 445 of this issue appears an announcement by the War Office regarding temporary commissions in the R.A.M.C. for home service. As we go to press we are informed by the Army Medical Department that the response to this notification has been so satisfactory that enough applications have already been received to fill all existing vacancies.

Letters, Notes, and Answers.

All communications in regard to editorial business should be addressed to ***The EDITOR, British Medical Journal, British Medical Association House, Tavistock Square, W.C.1.***

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the BRITISH MEDICAL JOURNAL alone unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring REPRINTS of their articles published in the BRITISH MEDICAL JOURNAL must communicate with the Financial Secretary and Business Manager, British Medical Association House, Tavistock Square, W.C.1, on receipt of proofs.

All communications with reference to ADVERTISEMENTS, as well as orders for copies of the JOURNAL, should be addressed to the Financial Secretary and Business Manager.

The ***TELEPHONE NUMBERS*** of the British Medical Association and the BRITISH MEDICAL JOURNAL are *MUSEUM 9961, 9962, 9963,* and *9964* (internal exchange, four lines).

The ***TELEGRAPHIC ADDRESSES*** are:

EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology Westcent, London.*

FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate Westcent, London.*

MEDICAL SECRETARY, *Mediocera Westcent, London.*

The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin*; telephone: 4737 Dublin), and of the Scottish Office, 6, Drumsheugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh*; telephone: 4361 Central).

QUERIES AND ANSWERS.

MR. W. F. HAMILTON (St. Leonards-on-Sea) asks whether unsatisfactory results have been found to follow the use, in the preparation of the skin for surgical operations, of a solution containing 1 per cent. each of crystal violet and brilliant green in a mixture of rectified spirit and water. He states that he has known blistering to occur and also some delay in skin union, even in aseptic wounds.

CHRONIC URTICARIA.

"PRURITUS" would be glad of suggestions in the treatment of a case of chronic urticaria in a woman aged 50. The condition has lasted several months, in spite of careful dieting, administration of intestinal antiseptics, and calcium chloride and lactate; externally, soothing lotions and exposures to *x* rays and artificial sunlight—all with no beneficial effect. The patient looks healthy, though suffering from disturbed sleep, and the urine is free from sugar and albumin.

INFECTION IN BAKERIES.

A MEDICAL CORRESPONDENT (Scotland) relates that he has been concerned in the following case: A working baker employs several workpeople; two of them were removed to hospital suffering from diphtheria, and within a week a third developed a sore throat. Our correspondent asks what section of the Public Health Act covers the matter.

*** The baker would not, as such, under the Public Health (Scotland) Act, 1897, be required to intimate the occurrence of sore throat in his third employee to the medical officer of health. If, however, the working baker happened to stand to his third employee in one of the relations specified in Section 3 (1) (a) of the Infectious Disease (Notification) Act, 1889, and if at the same time he was aware that his third employee was, in fact, suffering from diphtheria, he would, in these circumstances, but not otherwise, be required to send a notice to the medical officer of health. Action might possibly be contemplated against the employer under Section 16 (5) of the Public Health (Scotland) Act, 1897, which says that any trade or business so conducted as

to be injurious or dangerous to health shall be deemed to be a nuisance; or against the employee under Section 58 of the same Act and the amending Act of 1907 for engaging in an occupation connected with food, provided he knew that he was, in fact, suffering from diphtheria and did not take proper precautions. But a local authority proposing to go to court under any of the sections cited would probably be expected to prove, not merely negligence on the part of those concerned, but deliberate suppression of the facts, and also to show that its own officers, by visit, inquiry, and otherwise, had exercised due diligence to keep in touch with the progress of events at the bakery.

THE ACTION OF UROTROPINE.

DR. ROBERT ANDERSON (Erdington, Birmingham) writes: I would ask two questions with regard to the action of urotropine. (1) How can it act as an antiseptic in one part of the body only in an acid medium and in another in an alkaline one? (2) If its action in the first instance depends on its decomposition by an acid, how does it escape decomposition by the hydrochloric acid of the stomach? In the BRITISH MEDICAL JOURNAL, October 16th, 1926, Dr. Hurst states that urotropine has been proved to act as an antiseptic in alkaline bile. It is not generally known that urotropine is a cause of dermatitis in rubber workers. Such cases nearly always occur during hot weather, when the workers perspire freely. The acids of the perspiration are supposed to decompose the urotropine.

*** The action of urotropine is rather a puzzle at present. It is a definitely ascertained chemical fact that urotropine only undergoes decomposition into formaldehyde in an acid medium; for example, only 1 per cent. is split up into formaldehyde in an hour in a feebly acid solution (pH^6). At an acidity corresponding to that of the stomach contents (pH^2) about 30 per cent. of urotropine is split up in an hour. It is generally agreed that urotropine has no disinfectant action until it liberates formaldehyde. The action of urotropine in producing disinfection in an acid medium—for example, acid urine—is well established and understandable from the above facts. It is known, however, that the amount of action produced varies considerably in different persons, and this is believed to be due to the varying quantity of the dose administered which is split in the stomach contents. Any portion of the drug which was split up in the stomach contents would be rapidly neutralized by reaction with the neighbouring tissues. Pharmacologists have generally declined to believe that urotropine acts as a disinfectant in neutral or alkaline media, such as the bile or cerebro-spinal fluid. In recent years, however, evidence has accumulated that urotropine can act as a disinfectant in the bile. The evidence for this is strong, although perhaps not quite conclusive. The only explanation of this phenomenon that we have come across is that the bacteria living in alkaline media may produce small amounts of acid and so the immediate surroundings of each bacterium may be faintly acid. According to this theory urotropine would be split up when it met the bacteria, and the liberated formaldehyde would kill the bacteria. It is very difficult to prove or disprove this hypothesis, but it seems to be the only one at present that at all meets the facts.

EPIPHORA.

DR. A. C. BALFOUR (Aviemore, Inverness-shire) writes: In answer to Dr. A. T. Brand (JOURNAL, February 26th, p. 410) I understand that Parke, Davis and Co. only have one solution—that is, 1 in 1,000—and the directions given for 1 in 10,000 are 1 fluid drachm of solution of adrenaline chloride and 9 fluid drachms of physiological salt solution, so that the one drop in 16.6 oz. of water is not necessary for the correct dilution.

LETTERS, NOTES, ETC.

TREATMENT OF TETANUS BY INTRATHECAL INJECTION.

DR. M. ALLAN (Patricroft) writes: I read with much interest Dr. Bertram Muir's communication (JOURNAL, January 29th, p. 186) on the treatment of tetanus by intrathecal injection of antitoxin. As clinically and experimentally (as shown by Bruce) it can be demonstrated that intrathecal injections are of undoubted benefit, we need pay little attention to the failure of the laboratory to explain the fact. I have seen two cases of tetanus: one was in a carpenter who had received a lacerated wound by a flying splinter of wood to his right thenar eminence. He was treated by intramuscular injections, but death resulted three and a half days after admission to hospital. The other case was in a hide worker, the origin of the injection being in a septic wound of the left thumb. Profiting by my former experience, I gave on the first day 20,000 units intrathecally, together with a similar dose into the body of the vastus externus muscle. On the following day, under general anaesthesia, a similar dose was given, and thereafter the blood stream kept saturated with antitoxin by means of intramuscular injections. Recovery was rapid and uneventful. I do not agree with Dr. Muir that there was anything to be gained in his case by intrathecal injection at the anatomical site of the anterior horn cells of the spinal cord. Even when an early diagnosis is made the toxin has spread far and wide, and after the intrathecal injection I prefer to elevate the foot of the patient's bed and remove the pillow for two hours in order to flood the higher and more important centres with antitoxin.

THE DANGEROUS JUNKER.

DR. H. G. DODD (Hove), referring to Mr. W. J. Foster's condemnation of the use of valveless Junker's inhalers (JOURNAL, February 5th, p. 261), mentions a description by himself in the *British Journal of Anaesthesia* for October, 1926, of a modification of Junker's inhaler, in which the inlet tube is straight and extends nearly to the bottom of Buxton's bottle, its lower extremity being tipped with bone, as in the older models. A ball valve is fixed to the afferent tube outside the bottle, close to the attachment of the rubber tubing from the hand bellows, as suggested by Rigby. It is claimed that this modification, while being free from danger, is without certain disadvantages found in the Rigby type of inhaler.

FOG FLARES FOR MOTORISTS.

As the result of experiments in the use of flares at road junctions during dense fogs, the Automobile Association has recently established a service of fog flares at some fifty roadside points. When a dangerous fog occurs, obscuring these road junctions, the patrols light the flares and keep them alight during the day, and, if necessary, after dark until ordinary traffic ceases. It is stated that this new service was much appreciated during the recent fogs.

THE IDEAL HOME EXHIBITION.

THE popular annual event, the *Daily Mail* Ideal Home Exhibition, was opened on Tuesday by the Hon. Mrs. Esmond Harmsworth. Within the walls of Olympia many new ideas for making the life of the housewife easy and healthy have been collected. It is possible that labour-saving devices bring with them their own troubles; on the path of progress the human mind does not always keep step with human invention, and the female domestic is quite capable of upsetting the calculations of the most ingenious inventor. Nevertheless, the completeness of equipment of the houses in the "Village of New Ideas" in the New Hall Extension, with its range of buildings from a Tudor manor house to a £850 cottage, will impress the visitor. An exhibition of healthy homes does not, of course, contain many objects that are purely medical. The Scholl Manufacturing Company exhibits some of its appliances for foot ailments, while the Dowsing Radiant Heat Company shows many methods of application of light and heat, including equipment for the dubious purpose of home use. The use of ultra-violet rays is illustrated by a working model of the new monkey house shown by the Zoological Society. The air is not directly heated, the monkeys being kept warm by sitting on floors heated by electric heaters. The roof of the house is entirely glazed with "Vitaglass," while in dull weather the supply of ultra-violet rays is kept up by powerful incandescent electric lamps made of "Lamplough" glass. The food products exhibited are numerous, and a section for Empire food and cookery is included. Concentrated foods, such as Horlick's Malted Milk, Wander's Ovaltine, and Glax-Ovo are available for the exhausted. The water drinker can investigate the advantages of the United Water Softeners Company's "Permutit"; soiled linen after washing can be wrung and mangled in the home by Messrs. Gamage's "Referee" wringer; water-closets can be cleaned and deodorized by the Lewbart Automatic Cleanser; and the housewife need only polish her stove once a year, according to the Mond Staffordshire Refining Company, if she uses "Melanoid."

COAT LININGS.

THE lining of coats, particularly of overcoats which may have to be taken on and off frequently during a round of visits, is a matter of some consequence to medical men. An advertisement of Courtaulds' linings appears this week. The artificial silk of which these materials are made has, as is well known, most of the qualities of silk, and has in particular the slippery surface desired in linings. Further particulars can be obtained from Messrs. Courtaulds Limited, Department 139 M, 16, St. Martin's-le-Grand, London, E.C.1.

SIR JAMES MACKENZIE'S LATER VIEWS ON THE NATURE OF CARDIAC ACTION: CORRECTION.

WE regret that, owing to a printer's error, the word "node" was substituted for "muscle" in line 29 of the report of the meeting of the James Mackenzie Institute on February 1st (BRITISH MEDICAL JOURNAL, February 19th, p. 333, col. 2). The sentence, which begins in line 25, should read as follows: "As regards the spread of the excitation wave through the auricle, the balance of evidence, having regard to direction and spread and rate of transmission, was greatly in favour of a spread through the auricular muscle." This was one of the main points of Dr. Orr's address.

VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 42, 43, 44, 45, 48, and 49 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 45 and 47.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 83.

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